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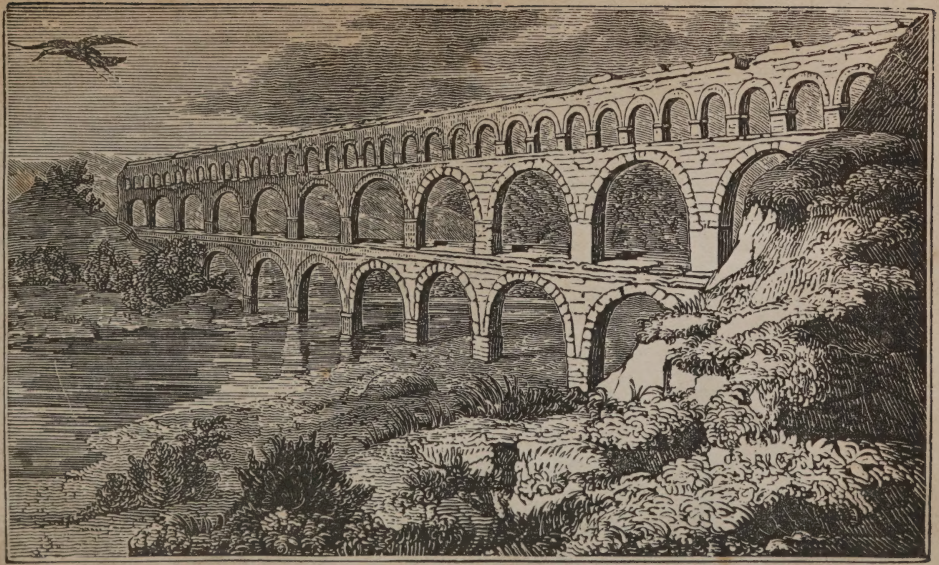

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THE

CASKET.

THE ECONOMY OF NATURE.

. . . . . Each moss,
Each shell, each crawling insect, holds a rank
Important in the plan of Him who framed
This scale of beings; holds a rank, which lost,
Would break the chain, and leave behind a gap
Which nature's self would rue.—THOMSON.

THERE is no study, perhaps, more delightful than that of tracing the all-wise disposition of the Creator in the reciprocal uses to which all created things were designed. It is impossible to contemplate this subject without being struck with the infinite wisdom of Almighty God. We find things so connected together that they are all subservient to the same end, and all contribute to assist in the preservation of the several species. The death and destruction, therefore, of one thing, is made useful in the restitution of another, and this is one of the most interesting facts in the economy of Nature. Everything is so perfectly conceived, so wonderfully propagated, and so providentially supported, that we are not only lost in wonder when we reflect upon them, but are obliged to confess that after all the researches and observations which have been made, an ample field still remains

for fresh remarks, and interesting discoveries in the works of nature.

> . . . . . Almighty Being,
> Cause and support of all things, can I view
> These objects of my wonder; can I feel
> These fine sensations, and not think of thee?

It would afford me a satisfaction which I cannot describe, could I think that these reflections, feebly as they are expressed, would lead any one to acknowledge the power and goodness of the Creator, as seen in the works of his creation, and to improve his mind by the study of them. In every plant, in every insect, we may observe some beauty, or some curious properties which are not to be found in other bodies. On comparing them we shall be convinced that they were not created by chance, but were contrived for some useful purpose——JESSE's *Gleanings*.

POISONOUS PLANTS. III.

HELLEBORE.

OUR engravings represent three plants, differing materially from each other, but which all bear the name of Hellebore; and as their properties are very different, it is worth while to be able to understand the distinction.

Of these plants the *White Hellebore* is the only species which is decidedly poisonous, and its noxious properties reside not only in the root, which is the most deadly poison, but also in every other part of the plant; even the leaves and seeds prove deleterious to many animals. The dried root has no peculiar smell, but a durable, nauseous, acrid, bitterish taste, burning the mouth and jaws; when powdered, if applied to a wound, it affects the constitution in the same manner as taken inwardly. It is supposed

WHITE HELLEBORE, or VERATRUM,
(Veratrum album.)

FETID HELLEBORE, OR BEAR'S-FOOT,
(Helleborus fetidus.)

to produce madness;—Shakspeare alludes to this property of Hellebore in his tragedy of *Macbeth*:—

> Have we eaten of the insane root
> That takes the reason prisoner?

It has been used in medicine, particularly by the ancients; but, if it is a safe medicine, it is at present seldom employed. It is a native of Italy, Switzerland, Austria, &c.; and was first brought into this country about the year 1596.

The *Black Hellebore* is very different from either of the others. It takes its specific name from the colour of the root, which is covered with a coarse black integument; it was originally brought from Austria and Italy, and first cultivated in England about two hundred years since. If the weather is mild, it is in bloom in January, and becomes no insignificant ornament to the garden at that dreary season of the year.

Although the Black Hellebore is not decidedly poisonous, its action on the system is extremely violent; if a portion of the recent root is chewed, the tongue, in a few minutes, becomes benumbed, and loses its sense of feeling, as it does after eating or supping anything too hot. The ancients considered it a wonderful remedy for madness, but its use at present is entirely laid aside.

The *Fetid Hellebore*, Great Black Hellebore, or Bear's Foot, for it has all these names, grows wild in England, and flowers about February. The blossom is of a pale green colour; the smell of the recent plant is extremely unpleasant, and the taste so acrid and bitter as, if chewed, to remove the skin from the mouth. A decoction of the leaves is commonly employed as a domestic medicine against intestinal worms; but although, when carefully administered, it may be useful, several instances are on record of its fatal effects, when taken in too large a quantity

BLACK HELLEBORE, OR CHRISTMAS ROSE,
(Helleborus niger.)

ON HEAT; AND ITS APPLICATION TO THE VARIOUS PURPOSES OF LIFE.

From the consideration of the subject of Light, the mind passes, by a natural transition, to that of Heat: for these agents, though not necessarily or always, are, in reality, very often associated together; and they are each of them characterized by the want of that property which almost seems essential to matter, namely, weight. In their relation to the physical existence of man, and animal life in general, there is this difference between them,—the presence of light is only indirectly necessary,—the presence of heat is directly necessary Different degrees of heat, indeed, are requisite for different species of animals; but if the heat to which any individual animal be exposed is much below that which is natural to the species, and be continued for a sufficient length of time, all the vital functions are eventually destroyed; or, as in the event of the hybernation of particular species of animals, are at least partially suspended.

The degree of heat adapted to the human frame is so nicely adjusted to the bodily feelings of man, that, if we take a range of fifty degrees of Fahrenheit's thermometer, as indicating the average extent of variation to which the body is exposed in this climate, it will be found that a difference of two or three degrees, above or below a given point, will generally be sufficient to create an uncomfortable sensation. It has been ascertained that the point of 62° or 63° of Fahrenheit is that which, upon an average of many individuals, is, in this climate, the most congenial to the human body. But it is a merciful provision of nature, considering the numerous vicissitudes of human life, that man is capable of resisting very

great, and even sudden, alterations of temperature, without any serious inconvenience.

This uniformity of animal temperature is, in a great measure, owing to the process of evaporation, which takes place from the general surface of the body, and from the air-vessels of the lungs; for if animals are confined in a chamber, the atmosphere of which is so moist that no evaporation can take place from the surface of their bodies, it has been found that their temperature is as capable of being steadily and uniformly raised, by increasing the heat of the room in which they are placed, as if they were inanimate matter.

The application of heat to the various purposes of life has a very extensive range; and with reference to the daily preparation of the more common forms of our food, whether animal or vegetable, distinguishes the habits of man from those of every other species. Without the power, indeed, of commanding the application of heat in its various degrees, many of the most important arts of civilized society would fail.

Without that power, how could clay be hardened into the state of brick, of which material most of the habitations in many large cities are constructed? Without the aid of the same agent, how could quicklime, the base of every common cement, be produced from limestone? Without the application of the higher degrees of heat, metals could neither be reduced from their ores, nor the reduced metals be worked into convenient forms. Neither, without the same aid, could that most useful substance, glass, be produced; a material which, in comparison, hardly known to the ancients, has, in modern times, become almost indispensably necessary to persons of the poorest class, as a substance of daily use for various economical purposes. But if we consider the pro-

perties of this valuable compound, with reference to the aid derived from it in the investigations of science, there are few substances of higher importance to the philosopher. Among the most useful of those properties are its impermeability to fluids, either in a liquid or aeriform state, its ready permeability to light, together with its power of modifying the qualities of that fluid, and its resistance to almost all those chemical agents, which are capable of destroying the texture of most other substances with which they remain long in contact.

In considering the extensive utility of the thermometer and barometer, in their common and most convenient forms, it is evident that their practical value almost entirely depends on the transparency of glass, and on its impermeability to air; and the same properties very greatly enhance the value of glass, in all those philosophical experiments which are carried on under what is called the exhausted receiver.

But the most important result of the transparency of glass, is the modification which light undergoes in its passage through lenticular masses of that material. When, for instance, in consequence of disease or advancing age, the eye no longer retains the power of discerning objects distinctly, how much of hourly comfort, as well as of intellectual enjoyment, would be lost, were we not able to supply the natural defect by the artificial aid of glasses of the requisite form and density. And, again, how many important facts in the physiology of animals and vegetables, as also in the constitution of inanimate bodies, would have remained for ever undiscovered, but for the aid of the microscope; the magnifying powers of which, depend on the transparency and form, and the right adjustment of those pieces of glass through which the objects subjected to observation are viewed? And,

lastly, how shall we estimate the value of those discoveries which the world owes to that wonderful instrument, the telescope?

Having referred to the effects produced by heat on various forms of matter, let us inquire what facilities nature has placed within our reach, for the purpose of exciting and maintaining heat itself. The chemist, in his laboratory, surrounded by the numerous and various agents which he is constantly employing, can never have any difficulty in producing it; but as there are few individuals who have commonly such magic instruments at hand, and even if they had, it is probable that they would want both the leisure and inclination to preserve them in a state fitted to produce at any moment the intended effect. The means of maintaining heat, when once excited to a sufficient extent and degree of intensity for the various purposes of social and civilized life, shall now be considered. To this important purpose, among others, the products of the vegetable world, both in a fossil and recent state are destined?

In the early periods of civilization, and while the population of a country bears a small proportion to the extent of soil occupied, the indigenous forests easily supply an ample quantity of fuel; or, in the absence of those larger species of the vegetable kingdom, which may be described under the term of *timber*, the humblest productions of the morass, though not the most desirable, are, however, a sufficient substitute. Thus the *sphagnum palustre*, and other mosses, by their successive growth and decay, form the combustible substratum of those extensive and uncultivated tracts in Ireland, which contribute, by the turf and peat which they afford, to the comfort of myriads of individuals, who, were it not for this source of supply, would be in total want of one of the principal necessaries of life.

In many populous districts of this island, the aboriginal forests have long since been cleared from the surface of the earth, and their site is now occupied by cultivated lands and a condensed population. The former source of fuel has consequently in such parts long since failed; but the clearing of the surface has, in many places, detected that invaluable mineral combustible, which, usually bearing in itself indubitable marks of a vegetable origin, from the traces of organization still apparent in almost every part of its substance, was deposited ages before it was wanted, as a future substitute for the fuel which, in the meantime, has been derived from the actually existing vegetable kingdom.

It is not intended here to enter into the general consideration of those geological formations called *coal-fields*, which are the repositories of this useful mineral; but there is one circumstance in their history, so evidently calculated to facilitate the labour of man in obtaining this substance, and to extend its supply, and so remarkably, though not exclusively, characteristic of those particular formations, that, though not obvious to a general observer, it cannot fail to arrest the attention of those to whom it is pointed out. A coal-field may be represented, in a popular description, as consisting of a succession of alternating strata of coal and sand-stone, &c., which, having been originally deposited in a basin-shaped cavity, in such a manner as to be at the same time parallel to the concave surface of the basin and to each other, have been subsequently broken up by some force, that has thrown the planes of the ruptured masses into various directions. Now, had the strata remained undisturbed, a very considerable proportion of the coal which is now quarried, would most probably never have been obtained by human

industry; for the strata dipping down from the circumference towards the centre of the basin, that perpendicular depth beyond which it is practically impossible to work the coal, would soon have been reached in the operation of mining. But in consequence of the rupture, and consequent dislocation of the strata, many of those portions which were originally deposited at such a depth beneath the surface as would have rendered the working of them impossible, have been thrown up to the very surface, and thus have become available to the miner.

[Abridged from KIDD's *Bridgewater Treatise.*]

THE FAST OF RAMAZAN, OR THE TURKISH LENT.

THE *Sawm'ur-Ramazan*, or Fast of the Ramazan, is one of the most famous rites which are celebrated in the religion of the Turks; the keeping of it is a canonical obligation, and, indeed, one of the five fundamental points on which Islamism rests,—the others being the acknowledgment of one God and his prophet Mohammed; the offering up of prayer at stated periods; the bestowing of alms; and the performance, if possible, of the pilgrimage to Mecca.

The term *Ramazan* is the name of the eighth Turkish month,—a period of strict fasting, which may be called the Mohammedan Lent, and which is followed by the festival of the *Bairam*.

The beginning of this fast is coincident with the beginning of the new month; and as the Turkish year is lunar, the beginning of the new month is determined by the beginning of the new moon, or rather by its first appearance in the heavens, because the science of the Turkish astronomers has not yet led them to calculate the exact time when the moon is in conjunction (to use our technical expression), but

merely to observe its first appearance afterwards. The importance of fixing with precision the exact time when the Ramazan is to commence, renders it necessary that the first appearance of the new moon which marks its month, should be carefully observed; and grave and rigorous precautions are taken to secure an early and correct observation. The task, indeed, is one which occupies the attention of the magistrates in the different cities of the empire, and even of the ministers themselves in the capital; there the Muezzins take their station on the minarets of the most elevated mosques, and often pass the whole night in watching the precise moment of the moon's appearance.

Generally speaking, the testimony of two competent witnesses is necessary to constitute a legal proof of the new moon's actual appearance; that testimony, however, is decisive, and at the expiration of the appointed term of thirty days from the period of the observation, the fast may be broken, and the festival of the Bairam commenced.

If the weather be cloudy at the expected time, and thus prevent the moon from being generally seen, the testimony of one single witness, without distinction of sex or condition, who has been fortunate enough to discover it, may be received as evidence of the appearance; but then it is received not as a legal proof, but simply as an information. In this case, the fast cannot be broken as in the former, at the expiration of the thirty days; it must be continued till the appearance of the next moon (of the succeeding month Schewal) shall announce with certainty that the time for celebrating the Bairam has arrived, and, therefore, the period of the fast has terminated. If the appearance of this second new moon takes place before the thirty days have expired,—for instance, at the end of

twenty-seven, twenty-eight, or twenty-nine days of fasting, the Ramazan is still considered at an end, and the deficiency, of one, two, or three days, as the case may be, is made up by a *Sawm'ul-caza*, or "fast of satisfaction," at some other period of the year, according to the pleasure of the individual.

If it should happen that the cloudiness of the weather altogether prevents any observation of the appearance of the new moon, then the Ramazan is commenced at the nearest period which can be substituted for the true time, that is to say, on the thirtieth day of the preceding month, Shaban, as it is called. A rectification is effected as soon as possible, and the Mussulman then finds out how many days of fasting he is in debt, and has still to perform at a future period; or how many he has already spent in exercises of supererogation. If, while the weather is cloudy, some individual should happen to perceive the new moon, but his testimony to that effect should be rejected by the magistrate, still he himself is bound, from the period of his observation, to begin his own fast; and in case of his failure so to do, he is obliged to perform a fast of satisfaction afterwards.

We are assured that there is no fast in the religion of any people more rigorous in its ordinances than the Turkish Ramazan. To the temper of the stanch Mohammedan, it is depicted as trying in the extreme. During the whole month for which it lasts, so long as the sun lingers above the horizon, he is not permitted to refresh himself with the least morsel of food, the least drop of liquor,—or, what is the most grievous privation of all,—the least whiff of tobacco; and the very strict devotee will not even indulge in the simple pleasure which may be derived from the smelling of sweet-scented flowers. The exceptions to the rigour of this rule are carefully limited; to none is a dispen-

sation allowed, except to children, nurses, invalids, the aged, and those who may be travelling. Of course, the case of necessity is provided for; and the man who is near dying from hunger, is not expected to sacrifice his life to his fast. All, however, save the children, who enjoy this exemption, are still bound to some act in the way of a substitute: from the aged an almsgiving is required, and from the rest a future "fast of satisfaction," which, if the Moslem neglects it till the day of his death, he must then supply by a liberal donation. The traveller must never avail himself of his exemption on the first day of his journey, nor unless he is pressed so to do, on any other; and the invalid (except in some specified cases) must have had three fits of fever upon him, or be pronounced by a Mohammedan physician to be in such a condition that his malady will be aggravated, or his recovery retarded, by the observance of the fast.

Under these trying circumstances, the only resource of the Moslem is in his beads; for every Turk in a decent condition of life, carries with him a complete rosary, generally made of date-stones from the holy neighbourhood of Mecca. If he be young and careless, he contents himself with simply counting them, or moving them backwards and forwards; if he be old and devout, he accompanies the operation with the repetition of the "ninety-nine attributes" which the Mohammedan doctors have assigned to the Almighty. Hours together does he pass in this occupation, and in contemplating the slow-moving hand of his time-piece, eager for the moment when the luminary of the world shall release him from his abstinence, by withdrawing its irksome orb from his sight.

There are times when the observation of this fast is a much more severe infliction than at others; for as the years of the Mohammedans are lunar, the

period which is assigned for this penance must gradually pass through all the seasons of our solar year. It might appear sufficiently disagreeable when it falls in the Winter; but "its unwelcome intrusion seems absolutely invented for the destruction of the Moslemin species," when the procession of the lunar months brings it round to the longest of the hot days of Summer. "It is then," to quote a modern writer, "that the Christian, rising after a plenteous meal, if he has common prudence, avoids all intercourse whatever with the fasting Turk, whose stomach, void of everything but sourness and bile, grumbles over each chance-medley of the sort as over malice prepense, rises in anger at the supposed insult, and vents its acrimony in bitter invectives." All travellers agree in representing the condition of the true Mohammedan, during this period of privation, as one wretched in the extreme; not a smile enlivens his countenance, not a pleasant look escapes him. "He is dead to all the world," as an American traveller remarks, "except his own appetites, and to the lively dancing, eating, drinking, ranting, roaring Greeks, whom he would most willingly see impaled alive, as a punishment for their presumption in being happy in his presence while he is miserable."

It is said that the rich and the great contrive to soften the rigours of this fast by spending the night in pleasure, and sleeping or sitting in listless idleness during the greater part of the day; yet even these look very wretched, fixed on their divans or at their doors, without their favourite pipe in their mouths, and with no occupation but the listless fingering of the beads. It is on the class of artisans and workmen, those living by the labour of their hands, that it bears with its full weight, especially when it happens to fall in Summer; then these poor men must con-

tinue the whole day at work, perhaps exposed to the heat of the sun in their burning climate, without permitting themselves even a glass of water.

"I have seen the boatmen of Constantinople," says Mr. Turner, "lay on their oars almost fainting under the suffering; but I never saw, never met with any one who affirmed to have seen, an instance in which they yielded to the temptation of violating the fast." Mr. Carne, who happened to arrive in Constantinople during the Ramazan, gives us an illustration of the same point, from his personal experience. "After casting anchor at Buyukdere," he says, "the captain procured a boat to carry us back to Constantinople. One Turkish rower only had to pull against a strong wind for some miles; it was most laborious work for him, though well paid: it was the fast of the Ramazan; and the poor fellow pointed to his stomach very expressively, to signify that he had eaten nothing all the day."

Yet, rigorous as may be the penance of this fast, we are told that it is supported with the joy "which religious zeal and enthusiasm ordinarily inspire;" business is followed with the same activity as in the rest of the year (which, in truth, is not very great), and none but the weak or effeminate exhibit any symptoms either real or affected (for here, too, a little affectation is sometimes fashionable), of bodily or mental languor. The true Mohammedan is, indeed, more scrupulous on the strict observance of the Ramazan than on any other point of his religious practice; and well may he be so; for a voluntary transgression stamps the guilty author as an infidel, an apostate, worthy of the last punishment. The testimony of two competent witnesses is sufficient for his condemnation, without hope of pardon; and with this fate in prospect before their eyes, few or none dare openly revile or disregard this fundamental article of their religion.

Yet the busy tongue of scandal (or perhaps of truth) tells us, that there are Turks who prefer feasting to fasting within the forbidden hours, and who scruple not in the secresy of solitude, to gratify their stomachs at the expense of their consciences. Such men are to be found in the upper ranks only; for it is among the lower orders of the people, both in Turkey and Persia, that we are to look for the chief support of the Mohammedan religion, and for the really zealous observance of its rites and ordinances, at the present day. The following extract from the pen of a late writer, as well acquainted with the habits of the East as any traveller of his age, will serve as an amusing illustration of this alleged hypocrisy and backsliding:—

"Sometimes a demure Moslemin may be seen looking anxiously round on all sides to ascertain that he is not watched. The moment he thinks himself unobserved, he turns the corner of some of the Christian streets and ascends the infidel hill*. Led on as it were by mere listlessness from one turn to another, he still advances, till chance brings him just opposite a confectioner's or a pastry-cook's shop. From sheer absence of mind he indeed steps in, but he buys nothing. He only from pure curiosity examines the various eatables laid out on the counter. He handles, he weighs them, he asks their names, their price, and their ingredients. 'What is this? What do you call that? Where does that other come from? What huge raisins these are!' Thus discoursing to while away time, he, by little and little, reaches the inner extremity of the shop; and finding himself at the entrance of the recess in which, by mere accident, happens to have been set out—as if in readiness for some expected visiter—a choice collection of all that can recruit an exhausted stomach, he

enters it from mere thoughtlessness, and without the least intention. Without the least intention also, the pastry-cook, the moment he sees his customer slink into the dainty closet, turns upon him the key of the door, and slips it into his pocket. Perhaps he even goes out on a message, and half an hour or so elapses ere he remembers his unaccountable act of forgetfulness. He however at last recollects his prisoner, who all the while would have made a furious outcry, but has abstained, lest he should be unjustly suspected of having gone in for the purpose of tasting the forbidden fruits. The Greek unlocks the door with every expression of apology and regret; the Turk walks out in high dudgeon, severely rebukes the vender of cakes, and returns home weaker with inanition than ever. But when the pastry-cook looks into his recess, to put things in order, he finds, by a wonderful piece of magic, the pies condensed into piastres, and the sugar-plums into sequins."

But whatever may be the strictness or the sincerity with which this fast is kept during the appointed term of the day, there is no question as to the anxiety which all entertain to reach the end of it, and to hear the welcome announcement of the sun's departure.

There are some who pass the greater part of the nights of the Ramazan in prayer; and it is for these that the mosques are left open and splendidly illuminated both within and without. But the mass of the people spend the time in feasting and recreation. On their account the coffee-houses and cook-shops are allowed to remain open all night. In private houses, an entertainment, called *Iftar*, follows close upon the proclamation of sunset; and another repast takes place the next morning, about half an hour before sunrise, which is named *Imsak*, because it forms a preparation for the renewal of the fast. The nights of the Rama-

* On which stands Pera, the quarter of the Franks, or Europeans.

zan are also the season in which the grand vizier is accustomed to entertain the different officers of the state,—to give his "ministerial dinners," as we should say; these are regulated with the nicest attention to etiquette, beginning, on the third night of the month, with the ministers and great officers of the Porte, and continuing till the twenty-fifth in the order determined by ancient usage, according to the rank of the parties invited. There is no feasting on the first night of the month, because as the civil day of the Mohammedans begins with the setting of the sun, that night is not preceded by any period of fasting, neither is there any on the second.

The contrast between the days and nights of the Turkish Ramazan cannot fail to be highly amusing to the stranger. Mr. M'Farlane has depicted it vividly in his description of the scene which the town of Bergamo (the ancient Pergamos) in Asia Minor, presented at that season, in the year 1828. "The Turkish quarter of the town," he says, "was very dull in the day-time; half the shops were shut up,—few but the poorer Turks were abroad, or if you met an effendi, he seemed gloomy and unsociable. No sooner, however, had the evening-gun fired, than the scene became gay and animated. The bazaars were lighted up, the cook-shops thrown open, the coffee-houses crowded, pipes lit, and something like good-humour revived. Strapping fellows were seen stalking from the *kibabjis* with their smoking dinner; from better houses issued savoury odours of roasting and frying; everywhere you saw signs that the Moslemins were indemnifying themselves for the fast of the day with the feast of the night. At a later hour after the repast, the coffee-houses and the bazaars were well filled: some groups gathered round an itinerant tale-teller, on benches in the open air, all

smoking their chibouks, or indulging in the rarer delight of a *Narghile*" (water-pipe).

It is during the nights of the Ramazan, that these *Meddahs*, or story-tellers, meet with the greatest encouragement; the grave Turks then condescend to relax from their dignity, and indulge in hearty bursts of laughter and applause.

As we have mentioned above, the first of the grand vizier's "ministerial dinners," is that which he gives on the third night of the Ramazan to the chief ministers and officers of the Porte, namely, the Kehaya Bey, the Reis Effendi, and the Tschavousch-Baschy, the three secretaries of state, and the two Tezkeredjys, or masters of requests. The repast takes place in a very famous apartment called the *Arz-odassy*, or Hall of Audience, where the guests are seated round a circular table placed at one angle of the sofa. There is a second table in the other angle, at which are seated three ministers of inferior rank, a sort of under-secretaries. To all these guests, according to their rank, presents of watches, gold boxes, furs, and even jewels, are made by the officers of the vizier in the name of their master.

It is interesting to notice how some minds seem almost to create themselves, springing up under every disadvantage, and working their solitary but irresistible way through a thousand obstacles. Nature seems to delight in disappointing the assiduities of art, with which it would rear dulness to maturity; and to glory in the vigour and luxuriance of her chance productions. She scatters the seeds of genius to the winds, and though some may perish among the stony places of the world, and some may be choked by the thorns and brambles of early adversity, yet others will now and then strike root even in the clefts of the rock, struggle bravely up into sunshine, and spread over their sterile birth-place all the beauties of vegetation.—Washington Irving.

ASTRONOMY IN ANCIENT AND MODERN TIMES.

THERE can have been no period in the history of mankind, in which they did not behold, with a desire to comprehend them, the changes which are daily taking place in the face of the heavens above them; and there can have been none in which they did not perceive these changes to sympathize with others in the surface of the earth around them. He who looks out upon the heavens, beholds a canopy spread forth like the half of a great sphere, of which he appears to occupy the centre. In the day-time, when it is of the colour of azure,—the hue of light in which his perception of its existence is most pleasant to him,—the sun daily takes his course, in a zone, across this fair canopy, "like a giant that renews his strength." As night approaches, the curtain of the heavens gradually loses its transparent azure tint, becomes opaque, darkens, and at length it is black as sack-cloth of hair; then come the millions of the stars, and are strewed like gems upon its surface; and in her season the moon walks forth in her brightness, and holds sway amid the dreary watches of the night. These *daily* changes in the heavens appear to have but little relation to the changes of vegetable life, but over the whole of the animated creation their power is absolute. The song of the birds becomes mute at nightfall, and again wakes only to welcome the returning sun. The beast lies down in the forest, the [illegible]e crawls to his lair, and man himself sinks [illegible]r the mysterious influence of the changing hea[illegible]; and returning to that state of oblivion out of [illegible]n his birth first brought him, he stretches him[illegible]out to sleep. Such is the experience of a day. That of a year brings a still further knowledge of the wonderful sympathy between the changes in the

heavens above him, and those in the things around him. He sees the sun not daily to describe the same path in the heavens, but at one time to travel obliquely across them in a higher, and at another time in a lower zone, so as at one time to have a longer course to run, and at another a shorter; and thus at one time to give him a longer, and at another a shorter day. This change in the elevation and consequent length of the sun's oblique path in the heavens, he soon perceives to be coupled with a change in his own perceptions of the intensity of heat and cold; when the sun's path is lowest or most oblique, he is colder than when it is highest. And not only do his own feelings sympathize with this change, but all nature around him. The Hand that covered the beast of the forest with a coat of fur, now thickens its garment. The bird, whose path is free in the heavens, now guided by a spark of that intelligence which called it into being, becomes conscious of the existence of a warmer sky in some remote unseen region of the earth, and seeks it. The green herb withers, the blossom dies, the leaf becomes sapless, and falls to the ground. Is it possible, that he who beholds all these changes around him, and who is thus deeply interested in them, who cannot but see that they are all bound together as by a chain, and made to sympathize with one another, should not seek to trace out still more of the mystery of their union, to know more of its nature and laws, and to unravel its cause.

Man is necessarily, and from the very mode and nature of his existence, a speculative being. And of all subjects of speculation, the changes in the heavens are probably those which first arrested his attention. How earnestly must the master spirits of those days, when the secret of the universe was unknown, have wished and have laboured to account for phenomena

which we now so readily explain, by means of our knowledge of the form of the earth: how must the mysterious alternation of day and night, and the march of the seasons, have distracted them, wearied their imagination, and perplexed their reasoning.

The mighty changes in the heavens controlling, as they do, all the phenomena of animal and vegetable life, necessarily couple themselves in the mind with the direct agency of the supernatural world, and thus it was that the astronomy of the ancients became incorporated with their mythology. The sky was Atlas or Uranus,—it was eternal and unchangeable; the fixed stars were its organs of vision; the planets, of which the controlling power was the sun, rolled eternally, according to their notion, in concentric orbs of crystal around the earth. These planets they called gods, and their path was along the Milky Way, and they represented them by letters in the order of their distances.

Moon.	Mercury.	Venus.	Sun.	Mars.	Jupiter.	Saturn.
A	E	H	I	O	Υ	Ω

Saturn, the slowest of the planets, was taken as the symbol, and made the god of time, and, like time, Saturn destroyed his offspring; he took the *wings* of time and his name, Χρονος (*Chronos.*)

Jupiter, the most remarkable of the planets for his splendour, supplanted his father Saturn, occupied the throne of the universe, and became the king of gods.

Mars, of the colour of blood, and placed nearer to the sun, they imagined to be endued with attributes of a warrior, and called him the god of battle.

Venus, whose clear bright light is sometimes to be seen even through the daylight; at one time precedes the sunrise, and at another follows the twilight, alternately pursuing and pursued by the sun. They

believed her to produce the fertilizing dews of the morning and the evening; named her the goddess of fecundity, of beauty, and of love, and adored her under the names of Astarte, Astaroth, &c.

Mercury, the swiftest moving of the planets, was taken as the symbol of speed and lightness; he became the god of motion; and, being ever seen in the immediate neighbourhood of the sun, was designated the messenger of Olympus.

The sun was adored as the author of light, order, and fecundity; and the moon, as destined to imbibe this influence from the sun, in their conjunction, and transmit it to the earth. All the nations of antiquity erected altars to the Sun. In Egypt he was worshipped as Osiris, in Phenicia as Adonis, in Lydia as Athys, &c.

A multitude of divinities were thus frequently worshipped in the same being; a fact not to be wondered at, since the attributes which each nation assigned to their common object of worship, would necessarily partake in the errors of their knowledge of it, and the prejudices which they had attached to it. And thus, until it pleased God to make a direct revelation of his will to mankind by his Son, the history of the developement of the religious principle among them, was little other than a history of the wanderings and uncertainties of the human understanding, which, placed in a world it could not comprehend, sought, nevertheless, with unwearied solicitude, to develop the secret of it, which, a spectator of the mysterious and visible prodigy of the universe imagined causes for it, supposed objects, and raised up systems; which, finding one defective, destroyed it to raise another not less faulty on its ruins; which, abhorred the errors that it renounced, misunderstood those which it embraced; repulsed the very truth for which it sought; conjured up chimeras of invisible agents,

and dreaming on, without discretion and without happiness, was at length utterly bewildered in a labyrinth of illusions.

How great is the contrast! Since the age in which the heathen mythology had its origin, the religion of mankind has fixed itself upon the sure foundation of a revelation from God, and the human understanding has acquired for itself the master-secret of the universe. The wanderings of the stars on the firmament of the heavens are at length understood.

We find throughout the whole of what appeared to our ancestors the capricious motions of powerful but isolated beings, evidences of one impulse, one will, one design, one Almighty power, originating, sustaining, and controlling the whole. These beings, then, to whom, calling them their gods, it was natural that they should attribute a separate, independent, and capricious existence, subject to the indecision, the error, and the feebleness of humanity, appear to us but as the creatures of one sovereign intelligence, bound down in as passive obedience to that intelligence as the stone that falls from the hand, or the apple that falls from the tree; with no other thought, or will, or power, than that of any particle of dust blown about by the Summer's wind. Thus the whole of the sublime and gorgeous pageantry of the heathen mythology vanishes like the baseless fabric of a dream.

We know that this magnificent phantom retained its shadowy control over the intellect of man, in an age of great literary refinement, of profound knowledge in the philosophy of morals, and of high civilization; and had no revelation interposed, there could be nothing found in the mere literature, ethics, and civilization of *our* day, as distinguished from the literature, ethics, and civilization of theirs, to overthrow it; thus we might still, in respect to these, be

what we are, and yet the worshippers of a host of gods: but a single ray from the Sun of Righteousness, penetrating the mystery of the universe, is sufficient to dispel the illusion of Polytheism, and instruct us in the knowledge of the one only and true God.

How prodigious has been the progress which the universal mind of man has since made, how wonderful the vantage ground on which *we* stand, when we look forth upon nature; the human intellect now walks to and fro in creation, as with the strength of a giant, the growth of whose stature has been through ages, and who but yet approaches the noontide of his vigour.

[Abridged from the *Magazine of Popular Science.*]

Locke, in his chapter of the Association of Ideas, has very curious remarks to show how, by the prejudice of education, one idea often introduces into the mind a whole set that bear no resemblance to one another in the nature of things. Among several examples of this kind, he produces the following instance:—"The ideas of goblins and spirits have really no more to do with darkness than light: yet let but a foolish maid inculcate these often on the mind of a child, and raise them there together, possibly he shall never be able to separate them again so long as he lives; but dark shall ever afterwards bring with it frightful ideas, and they shall be so joined, that he can no more bear the one than the other."—Addison.

A man advanced in years, that thinks fit to look back upon his former life, and call that only life which was passed with satisfaction and enjoyment, excluding all parts which were not pleasant to him, will find himself very young, if not in his infancy. Sickness, ill-humour, and idleness, will have robbed him of a great share of that space we ordinarily call our life. It is, therefore, the duty of every man that would be true to himself, to obtain, if possible, a disposition to be pleased, and place himself in a constant aptitude for the satisfactions of his being.—Steele.

COMMON USE OF METALS.

If a convincing and familiar proof of the extensive application of the metals to the common purposes of life, were required, we need only refer to the case of many a common cottager, who could not carry on his daily concerns and occupations without the assistance of several of the metals. He could not, for instance, make his larger purchases, nor pay his rent, without silver, gold, and copper. Without iron he could neither dig, nor plough, nor reap; and, with respect to his habitation, there is scarcely a part of the structure itself, or of the furniture contained in it, which is not held together, to a greater or less extent, by means of the same metal; and many articles are either entirely of iron, or of iron partially and superficially coated with tin. Zinc and copper, and antimony, and lead, and tin, are component parts of his pewter and brazen utensils.

Quicksilver is a main ingredient in the metallic coating of his humble mirror: cobalt and platina, and metals, perhaps, more rare and costly than these, as chrome, are employed in the glazing of his drinking-cups and jugs. And, if he be the possessor of a fowling-piece, arsenic must be added to the foregoing list, as an ingredient in the shot with which he charges it; for it is arsenic which enables the shot, during the process of its granulation, to acquire that delicately spherical form by which it is characterized. So that, of the whole number of metals made use of by society at large, for common purposes, amounting to no less than twenty, more than half of these are either directly used by the peasant, or enter into the composition of the furniture and implements employed by him.—Kidd.

THE GOOD PARISHIONER.

Conceive him to live under a faithful minister; either judging charitably that all pastors are such, or wishing heartily that they were.

Though near to the church, he is not far from God. Like unto Justus, (Acts xviii. 8,) "one that worshipped God, and his house joined hard to the synagogue." Otherwise, if his distance from the church be great, his diligence is the greater to come thither in season.

He is timely at the beginning of prayer. Yet, as Tully charged some dissolute people for being such sluggards, that they never saw the sun rising or setting, as being always up after the one, and a-bed before the other; so some negligent people never hear prayers begun, or sermon ended, the confession being past before they come, and the blessing not come before they are passed away.

In sermon he sets himself to hear God in the minister. Therefore divesteth he himself of all prejudice, the jaundice in the eyes of the soul, presenting colours false unto it. He hearkens very attentively: 'tis a shame when the church itself is a cemetery, wherein the living sleep above ground as the dead do beneath.

At every point that concerns himself, he turns down a leaf in his heart, and rejoiceth that God's word hath pierced him, as hoping that whilst his soul smarts it heals. And as it is no manners for him that hath good meat before him, to ask whence it came; so hearing an excellent sermon, he never inquires whence the preacher had it, or whether it was not before in print, but begins to practise it.

He accuseth not his minister of spite for particularizing him. It does not follow that the archer aimed because the arrow hit. Rather our parishioner

reasoneth thus; If my sin be notorious, how could the minister miss it? if secret, how could he hit it without God's direction? But foolish hearers make even the bells of Aaron's garments to clink as they think. And a guilty conscience is like a whirlpool, drawing in all to itself which otherwise would pass by. One, causelessly disaffected to his minister, complained that he in his last sermon had personally inveighed against him, and accused him thereof to a grave religious gentleman in the parish. "Truly," said the gentleman, "I had thought in his sermon he had meant me, for it touched my heart." This rebated the edge of the other's anger.

He hides not himself from any parish office which seeks for him. If chosen churchwarden, he is not busily idle, rather to trouble than reform, presenting all things but those which he should. If overseer of the poor, he is careful the rates be made indifferent (whose inequality oftentimes is more burdensome than the sum) and well disposed of. He measures not people's wants by their clamorous complaining, and dispenseth more to those that deserve, than to them that only need, relief.

He is bountiful in contributing to the repair of God's house. For though he be not of their opinion, who would have the churches under the Gospel conformed to the magnificence of Solomon's temple (whose porch would serve us for a church,) and adorn them so gaudily, that devotion is more distracted than raised, and men's souls rather dazzled than lightened; yet he conceives it fitting that such sacred places should be handsomely and decently maintained: the rather because the climacterical year of many churches from their first foundation, may seem to happen in our days, so old that their ruin is threatened if not speedily repaired.—Fuller, 1642.

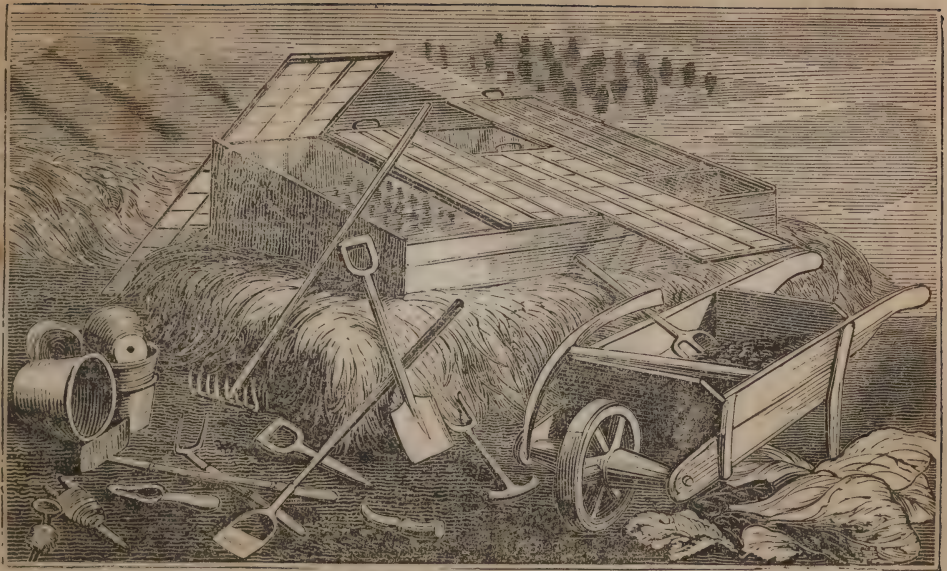
THE USEFUL ARTS. No. V.

Gardening.

The most obvious distinction between *Agriculture* and *Horticulture* has been already alluded to, but it must not be supposed that the employment of hand-labour in gardening is solely determined by the circumstance of the size of the ground not admitting the use of the plough; for an easy remedy would instantly suggest itself in this case,—that of increasing the area of land cultivated for gardens, or what is equivalent, uniting several small gardens into one large one. The true cause of the necessity for *digging* with a spade, instead of *ploughing*, is, that the plough is inadequate to bring the soil into such a state as is necessary for raising the proper produce of a garden with the least quantity of subsequent labour.

The greater part of the vegetables raised in gardens are either exotics from warmer climates, or indigenous plants improved by careful tillage bestowed on successive generations of them for many centuries; and if this care were not constantly employed, the plants in their improved state would not be able to bear the comparative rigour of our climate, but would speedily degenerate to their original, or natural, state.

It has been stated that the chief object of all tillage is to supply the growing plants with constant nourishment, by the frequent moving of the soil about them, and also to prevent their being robbed of that food by weeds growing among them. The operations required to effect these objects, can only be carried on when the plants are placed with great regularity in straight lines; and that each plant may be accessible, they must be planted in small patches, or *beds*, of earth, with walks between them. Instead of sowing the seed of many vegetables in drills, and afterwards rooting up the superabundant plants, (as was stated in a preceding article,) to be the mode of cultivating turnips in fields, it is productive of more economy both of seed and time, as well as of more benefit to their subsequent growth, to sow the seed closely in a small patch of ground, and to *transplant* the young plants when arrived at a certain age. By this means they may not only be planted in their proper beds with the utmost regularity, but there is also another motive for adopting this plan.



MELON FRAME, AND GARDENING TOOLS.

Every plant has particular seasons at which, when growing in its native soil or in its native climate, the various stages of its development take place, and if transferred to a less genial situation, it must be sheltered during its infancy from the severity of the air: added to which these successive stages of growth in all plants may be accelerated within certain limits by the application of artificial heat, in order to promote the germination of the seed and its early and rapid growth. This is a desirable object, in order to meet the demands of those who, having the means of purchasing luxuries, furnish the remuneration due to those who employ their care and skill in raising early produce by forced cultivation.

The artificial heat is applied in various manners, according to the vegetable and to the mode of its growth, but the premature germination of the seed is effected by sowing it on a *hot-bed*, which is prepared in the following manner. Stable-litter (or straw which has been saturated with the dung, &c., of horses and cattle) is piled with care and regularity into a quadrangular heap flat at the top. The putrefactive fermentation which speedily ensues in such a mixture of animal and vegetable matter, evolves a quantity of heat which is maintained and confined by the magnitude of the mass: on this heap fine mould is strewed, to the depth of seven or eight inches, and on the whole a *frame* is put, which is covered over with matting, or, if intended to be permanent, with glass lights. The seed being sown in this mould, the heat confined by the frame excites germination, and produces rapid growth in the plant. When strong enough to bear the open air, to which they must be gradually habituated, the young plants are taken up with every care, that the fine fibres of their roots may not be injured, and they are then planted in the bed in the following manner.

The earth being broken fine by digging and *raking* *, a

* The gardening rake is shown in the preceding cut, as well as several other tools alluded to in these papers, as the hoe, dibble, trowel, &c.

The *dibble* is a short thick piece of round wood, tapering to a point, and is usually made out of the handle of an old spade; if the point is shod with iron, the tool will last longer and effect its object more readily.

The *trowel* resembles that used by bricklayers and masons in size

line is set out by means of a string stretched between two pegs or iron pins, and the gardener taking the plant in his left hand, with the *dibble* in his right, he makes a perpendicular hole about six or eight inches deep; into this hole he lets the root of the plant descend, till the junction of the stem and root, or the *neck* of the plant, is level with the ground. He then pushes in the fine earth to fill up the hole again, and putting the dibble in obliquely, at a small distance from the plant, by a twist of the tool presses the mould close up to the root. Without this precaution the plant would die, if the fine fibres of the root, instead of being in close contact with the earth, were left in the interstices of the loose pieces.

The plants after this removal will languish for a day or two, particularly if the weather be hot and dry; but they will then revive and grow with increased vigour, in consequence of the greater space from which their roots can derive nourishment. Plants should never be planted out in wet weather, or when the earth is wet from recently fallen rain, for the mould in this state would, after being worked, harden into a mortar, which the fibres of the roots could never penetrate. When it is practicable, the operation should be performed just before rain, when the earth is too dry for it to adhere at all in clods under the hoe or spade.

As soon as possible after the transplanting, when the recently moved plants begin to grow again, the earth should be hoed or dug between them, and, if necessary, a little should be drawn up the stems. Weeds must always be eradicated, or hoed down by the *Dutch* or *Thrust-hoe*, as soon as they appear; and once or twice, at least, during the growth of the plants, the earth between them should be dug deeply, except the plants are vegetables cultivated for their tap-roots, as carrots, parsnips, beet, &c., or are bulb-bearing, as onions, leeks, &c. If the earth were dug

and general figure, only it is made of iron and is curved round a little, instead of being a flat piece of tempered steel. It is used for taking up small plants with a ball of earth round their roots, and for resetting them by making a hole in the mould to receive that earth: by this mode the plant receives little or no check to its growth in consequence of this removal; for the roots remain untouched during the process. A small *fork* like a dung-fork is also used to take up plants with, or to stir the earth close to them, which it does without cutting or injuring the roots as a spade or hoe would do.

deeply between the former class of plants, the roots would *fork*, or throw out side shoots, instead of growing straight or undivided; and the last-named kind of plants would, in such a case, not form large and full bulbs, but would *run to neck*.

Many kinds of vegetables will not admit of transplanting, but the seed must be sown thinly, in straight and equidistant drills; and when the young plants are fairly out of the ground, they must be thinned out by the hoe or by hand, leaving single plants only at such distances apart as they will require to be at when they are fully grown. It should be mentioned here, that nothing is so prejudicial to plants as allowing them to be too close together; more produce, whether it be in roots, leaves, or fruit, is obtained from fine healthy plants, that have had sufficient room to grow in, than from twice their number grown in the same space, and, consequently, crowded together.

Peas, scarlet-beans, and other climbing-plants, require sticks to be put to them to climb up; the sticks used for this purpose are the loppings of young trees, cuttings of underwood, &c., with the smaller branches and twigs left on; these sticks are set on each side of the row of peas, and are set sloping in contrary directions, thus forming a lattice-work, which furnishes support for every shoot to mount up by means of its tendrils.

Celery is *blanched* by planting the young plants at the bottom of trenches, dug twelve or eighteen inches deep; in proportion as the celery grows, the earth which was taken out of the trenches is put back again with care, that it may not get into the heart of the plants. The stems growing thus underground, or kept from the light and air, remain white, or do not acquire the green hue of herbaceous parts of plants exposed to the light of the sun. In consequence of this mode of proceeding, when the celery has finished growing, and is ready for use, it will be found buried in the centre of elevated ridges, the intermediate furrows being caused by the removal of the earth to form these. The plants are dug out as wanted.

Sea Kale is blanched by remaining constantly covered during its growth by earthenware pots, made tall expressly for this purpose. The pots have a small cover, which takes off to allow of the progress of the kale being examined.

Plants that grow early in the spring, or which are prematurely brought forward by *forcing* on hot-beds, require to be sheltered on the approach of frost. A very slight covering is sufficient in many cases, straw-litter or fern-leaves even being enough to prevent the radiation of heat from the earth, and when, in addition to these, mats of bass are spread over them, the frost must be severe that can penetrate to the plants beneath.

Single plants are sheltered by covering them over with garden-pots, or with *hand-glasses*, small frames made of lead or iron, in which panes of glass are inserted, as the casements of cottages are glazed.

Potatoes.

This well-known and important vegetable holds an intermediate place between the grain-bearing plants, which supply us with flour for bread, and those of which the leaves, roots, &c., are consumed as food. The potato contains a large proportion of starch. This vegetable principle abounds most in seeds; and of all seeds, the *Cerealia* contain the most.

The potato thrives best in a light, dry, loamy soil, and does not require much manure of any kind. This plant is never raised from seed for a crop, but small pieces of the *tubers*, or potatoes, are cut out, each having a bud, or eye, in it. These pieces are called *sets*, and are planted in rows in March or April. The potato requires a considerable quantity of tillage during its growth, the crop must be kept perfectly free from weeds by frequent hoeings, and the weak stem must be supported by having the earth drawn up about it when the plants are young. The crop is gathered in October or November, when the stalks begin to decay; the plants are dug up, and the tubers taken off from the roots. If stored in a cool, dry place, the potato will keep till near Midsummer of the following year, though in Spring the tubers will begin to put forth roots, especially if any damp gets to them. Should this vegetation proceed too far, the root is unfit for food, in consequence of the chemical changes brought about by the vegetable vitality.

The potato belongs to a family of plants, almost every one of which is, in a greater or less degree, poisonous. The noxious principles generally abound in the *fruit* or leaves, while the roots, and the subterranean stems, such as

the potato, are commonly innocent, if not wholesome, when boiled; but so formidable are the deleterious properties of the order, that even in the case of the valuable vegetable now under our consideration, the water in which it has been cooked is, in a certain degree, poisonous.

Starch in considerable quantities is obtained from potatoes, by crushing them, and well washing the pulp repeatedly, in cold water, till all the starch is extracted; the water then must be evaporated, or *decanted* off, and the starch will be left nearly pure.

The Principal Garden Vegetables which serve for Food.

The great variety of vegetable productions which serve as food to man, speaking especially of those which he cultivates, may be classed under a few great divisions, conformably both to their botanical characters, and to the part of the plant which is consumed. Though there is no part of a plant, which, in different species, is not eaten, yet, as forming a considerable portion of his *diet*, it will be found that it is either the root, the stem, the leaves, or the fruit, that man makes use of, while the bark, the seed, the flower, the bud, &c., of other species, are commonly used only as condiments, or sauces.

Next to the Cerealia, the seeds of that order of plants, called from their fruit, *Leguminous*, contain the greatest proportion of farina. The pea and the bean are the principal genera of the order employed as food by man in Europe.

The Pea is a climbing annual plant with a white flower; the seed, in its green, or unripe, state, constitutes a favourite dish, but for this purpose it is cultivated as a garden vegetable, while agriculture can alone furnish the ripe seed in sufficient quantities to supply the demand for dry peas, in the Navy, in Hospitals, &c. The pea requires a warm soil, the crop is gathered when the pod is quite ripe and dry, the seed is threshed out, the stalks and leaves, or the *haulm*, is sometimes given to cattle as fodder.

The seed of the pea tribe divides into two more readily than most seeds containing two *cotyledons*, or seed leaves. *Split-peas* are produced by grinding the seed lightly between mill-stones, or plates of iron, in mills constructed for the purpose; this operation frees the germ of the seed

from the skin or coats, and also separates the former into the two portions, each of which consists of an undeveloped cotyledon.

The Bean. This name is given to different species of plants, though all belonging to the *Leguminous* order: the *broad bean*, of which the unripe seed alone is eaten as a vegetable, is a species of the genus *Vicia*, or Vetch; an annual, growing to the height of from two to three feet, which, unlike the other species, is not a climbing plant. The delightful fragrance of its black and white flowers is familiar to every one; but the principal use of this bean when ripe, is as fodder for horses, cattle, hogs, and poultry. The *French* or *Haricot bean* is a dwarf species, and the *Scarlet-runner*, in Britain one of the most universally cultivated of all garden vegetables, is another species of the same genus *Phaseolus;* the whole pod or fruit of these plants is eaten before it is ripe. Both are of the easiest culture, but they must not be sown till all danger of frost is over. There are numerous varieties, and some of these are cultivated for food in nearly every country of the world where gardening is practised.

The Tare and the Lentil are species of the genus *Ervum*, and are used as food in some continental countries, but in England they are only cultivated for fodder.

The Leguminous order contain but few positively unwholesome or poisonous genera; among these the *Lathyrus*, *Laburnum*, and *Orobus*, are best known for their beautiful or fragrant flowers, which are such universal favourites.

The make of every kind of animal is different from that of every other kind, and yet there is not the least turn in the muscles, or twist in the fibres of any one, which does not render them more proper for that particular animal's way of life, than any other cast or texture of them would have been.—Addison.

There is no security in a good disposition, if the support of good principles, (that is to say, of Religion, of Christian faith,) be wanting. It may be soured by misfortunes, it may be corrupted by wealth; it may be blighted by neediness; it may lose all its original brightness; if destitute of that support.—*The Doctor.*

THE RHINE.

THE PFALTZ, OR CASTLE OF THE PALATINATE.

OF all the rivers of Europe, there is none which has attained such celebrity as the Rhine. It is one, without doubt, pre-eminently interesting in almost every point of view in which a river can be so. The "scenery of the Rhine" is proverbial; its attractions are sufficiently attested by the crowds of strangers that annually resort to its banks "in search of the picturesque." In all the charms, too, of historical interest, it is peculiarly rich: from the days of Julius Cæsar to our own—from the time when he built that famous bridge which carried him over its stream, to chastise the wild Germans who then dwelt beyond its banks, down to the close of the last European war, the Rhine has always figured conspicuously in the political changes and incidents of western Europe. Then, in the lighter attractions of fable, it abounds perhaps still more. By the common consent of mankind, it has long been established as the chosen seat of romance—the head-quarters of the spirits and supernatural agents which used so grievously to terrify many who lived in former ages, and which now embellish so many legends, for the amusement of their descendants.

This river rises in the centre of Switzerland, in the south-west part of the canton of the Grisons:—"a country," says Malte Brun, "in which all the streams are denominated currents or *Rheinen*, a word that appears to be of Celtic or ancient Germanic origin." It is formed by the junction of two principal streams, called the *Vorder Rhein*, or Fore Rhine, and the

Hinter Rhein, or Hind Rhine. There is a central stream which unites with the Fore Rhine before this junction takes place, and which has sometimes, though, as it is said, with little reason, been considered as the chief branch, notwithstanding its smaller size. To which of the others we are to ascribe the honour of that appellation, is a disputed point. The Fore Rhine is formed by several springs issuing from the foot of a little mountain which shoots out from the great St. Gothard: the Hinter Rhein has its origin in the magnificent glacier of the Rheinwald, of which we have spoken in a former number . The height of their sources is more than 6000 feet above the level of the sea; and the streams, therefore, descend from them with considerable rapidity.

The direction of the course of the Rhine at first, is to the north-east; and after receiving some tributary streams, it quits the country of the Grisons, at the town of Sargaus, having first become navigable some miles before at Reichenau for boats. It then passes into the lake of Constance, which it traverses throughout its whole length, having performed a descent of more than 4750 feet in the comparatively short distance which it has passed over from its source. On entering this lake, its course changes to the westward; and, continuing in this direction after quitting it, its bed is crossed by a ridge of the Alps, a little below Schaffhausen, and there it forms the celebrated fall of that name, which, though not the highest, is said to be the largest in point of volume that exists in the civilized part of Europe. Soon afterwards it reaches Basle , the mass of its stream being greatly enlarged by the junction of the Aar; and at that city its course again changes to the north—a general direction which it preserves pretty constantly till its termination.

It now proceeds to water the rich and beautiful valley, in which are situated Alsace, part of the territory of Baden, the ancient Palatinate, and Mayence. Its course onwards to Kehl (opposite to Strasburg), "is very impetuous; but flowing afterwards in a broad channel studded with agreeable and well-wooded islands, it assumes a very different character. Its banks have been in several places gradually undermined, and its waters are covered with boats. The breadth of the river at Mayence is about 700 yards; as it proceeds in its course, it waters a romantic, though fertile country; and a line of hills, covered with vineyards, extends at no great distance from its banks. It receives, in that part of its course, the Neckar, which conveys to it the waters of Lower Swabia and the Maine, which, in its numerous windings, collects the streams of the ancient Franconia." It is at Mayence, or Mentz, the point of the latter junction, that the banks of the Rhine begin to assume their most attractive aspect; and from that city down to Cologne , they are generally considered to exhibit all the characteristics of what is so peculiarly denominated the scenery of the Rhine. But the really-romantic and grand scenery does not commence till the river arrives at Bingen, from whence down to Coblentz, its waters are confined between lofty mountains. At Coblentz, where the confluence with the Moselle takes place, it flows through a more open and plain, though very beautiful country: as it approaches Cologne, or rather Bonn, a touch of romantic scenery is again afforded in the neighbourhood of the celebrated Seven Mountains. This is the last which the river offers in its descent. After leaving Cologne it waters a flat, dull country, till it loses its name, and almost its existence, in the alluvial levels of Holland.

It is customary with geographers to divide the course of this river into three principal portions; and this division will much assist our readers in understanding the descriptions of the varied scenery which its banks present. These three portions are termed the Upper Rhine, the Middle Rhine, and the Lower Rhine.

The scenery of the Upper Rhine is not very remarkable. From its sources to Basle the river flows through a country partaking more or less of an alpine character, but yet affording in the vicinity of its waters no remarkable views. The stream widens on passing Basle, and becomes studded with islands in profusion; but still the country on both sides is low and uninteresting. This character, indeed, it retains, to a certain extent, as far as Mentz; but long before the river reaches that city, it passes through one of the most interesting portions of Germany, a district to which, indeed, it gives its name. This is the celebrated "plain of the Rhine, every foot of which," says Mr. Russell, "teems with population, industry, and fertility, and during two hundred years has been fattened with the best blood of Europe." The river bounds it uniformly on the west, while to the east it is confined by mountains of irregular elevation, behind which tower the shaggy summits of the far-famed Hercynian, or Black Forest. For fertility and smiling beauty, this territory is compared to the plains of Florence and Bologna; the traveller looks down upon the charming landscape from the heights which bound it to the east, and his eye never tires. The general character of the objects does not vary, it is a perpetual succession of villages and small towns, lurking among vineyards, corn-fields, and orchards; "but at every turn they combine themselves into new groups, or lie under new lights. Here

a long stretch of the broad and glittering Rhine bursts into view, bounding the distant landscape like a silver girdle; there his place is occupied by the remoter summits of the Vosges. Here you may linger among the cottages of Offenthal, whose vine still retains its character, and hangs its cluster round the window of the peasant; or close by that little churchyard you may muse at the tree where Turenne fell on the last of his fields, and make a brief pilgrimage to the rustic chapel, beneath whose altar the heart of the hero was deposited.

The Middle Rhine comprises the whole of the romantic and beautiful scenery of this river; below Cologne, or above Mentz, there is little worth seeing which presents itself to the eye of the traveller as he passes along the surface of its waters. It is this region, then, which has so many charms for tourists, and which engrosses, indeed, the whole share of their attention; they hasten with all speed to Cologne, and, ascending to Mentz, seldom continue their excursion beyond that city. Nearly the whole of this long line of river-scenery possesses the attractions of beauty in an eminent degree; but it is only a portion of it that combines all the characteristic charms of what is peculiarly denominated the scenery of the Rhine. With the exception of the district of the Seven Mountains, which he passes soon after leaving Cologne, or rather Bonn, the traveller ascends for many miles before he discovers any views remarkable for grandeur; at length he beholds, rising on either side, gentle hills, which, as he advances, gradually approach the banks and swell into mountains, till he finds himself among narrow defiles picturesquely chequered with vineyard and with wood. This scenery accompanies him for a while, and then again, as he draws near Andernach, gives way to the tamer

landscape of a wide and comparatively level plain. This, too, in its turn, vanishes; and, as he journeys on towards Coblentz, he begins to perceive these rising hills which mark the entrance into that most celebrated portion of the Rhine which extends from Boppart up to Bingen. No sooner has he entered this enchanting region, than he feels the full effects of its diversified scenery; the several reaches of the river expand into a constant succession of lakes, encircled with a chain of the most picturesque mountains, "some clothed with wood, others naked, black, and frowning, with rocks rearing their pinnacled heads under every fantastic shape, and scarcely distinguishable from the ruined remains of forts and castles which are seen crowning their rugged summits themselves, 'shaped as they had turrets been, in mockery of man's art;' while the narrow spaces between their feet and the margin of the lakes are smiling with cultivation, and enlivened with towns and villages in the midst of vineyards."

The entrance into this "Paradise of the Rhine," in the descent of the river, is still more striking than that which the traveller passes through at Boppart. As he approaches towards Bingen, the course of the stream appears to his eyes blocked up by the chain of mountains before him; but on arriving at Rüdesheim, a busy little town at the foot of the mountain, on which is produced the famous Rüdesheimer wine, an abrupt turn in the river presents to him the great gulf, or opening in the rocky mountains, through which it pursues its course. The change of scene which ensues upon entering this gulf is described as "instantaneous, grand, and imposing." The fine open expanse of country which has accompanied him from Mentz at once vanishes, and is succeeded by romantic defiles of mountains hemming in the river, doubling the impetuosity of its course, and more

than compensating for the cheerful fertility of the scenes he has passed, by their wilder and more majestic beauties.

When the traveller has descended the Rhine, about nine-and-twenty miles from Mentz, and when he has been for nearly twelve miles gliding down upon its waters through the midst of that romantic scenery which commences at Bingen, he comes to a rock, standing alone in the middle of the stream, and crowned by a grotesque and singular building, "its roof covered with about fifty little slated spires and pinnacles, precisely resembling extinguishers." This is the edifice which is depicted in our engraving; the reader will recognise the "spires and pinnacles," though not indeed to quite so great a number as fifty. It lies opposite to the little town of Kaub, and is called the castle of *Pfalzgrafenstein*, or simply the Pfalz, the German word for the Palatinate, which, it will be recollected, was one of the old divisions of the German empire, comprising a portion of the country on both sides of the Rhine in this part of its course. "This fort," says Dr. Cogan, who wrote in 1792, "answers several important purposes. It is the state-prison of the palatinate, and it effectually prevents all vessels from eluding the tolls due to Kaub. Its situation and its construction, which unites the security of thick massy walls, subterraneous cells, iron-bars, and trap-doors, preclude all possibility of escape to the hopeless prisoner, and a watchman, continually resident in the turret, who rings a bell to advertise collectors on shore, makes it almost as impracticable for vessels to pass unnoticed." A French writer of the last century says, that it might be called "the Spandau, or Bastile of the Palatinate." In former times it must have been a convenient gaol for state-prisoners, and equally

convenient for its master to watch and plunder the passengers on the Rhine, instead of its levying, as it now helps to do, one of the few lawful tolls which are still imposed upon the navigation of the Rhine. This tower is said to possess a remarkable well of soft water, which is sunk very deep into the rock of its foundation, and which is in nowise connected with the river.

The general character of the scenery of the Rhine is seldom defined with correctness by travellers; they seem to be too much in rapture with its enchantments to measure the expressions which they apply to it. We frequently find it spoken of as "magnificent;" but this epithet cannot be properly coupled with its name. "It is not," to quote the more correct description of the author of a *Family Tour through South Holland,* "sufficiently capacious to justify the appellation of that term; but to the eye of the traveller, it possesses charms abundantly superior to those rivers that are so truly magnificent, that one shore is frequently invisible from the other. The Rhine includes within its banks sublimity and beauty, softness and amenity. In gliding down the stream, the eye embraces all these at one glance, and riots in endless variety;—the rugged and fantastic forms displayed by naked mountain-tops, vying in picturesque effect with some ancient and ruined castle, —the over-hanging forest,—the sombre crag mingled with the verdant vine,—the neatly-cultivated plain,— the clustered town, with its turreted towers and spires, —the sequestered village and the lonely cottage,— the beautiful island, and the constant succession of new objects, and a new disposition of them; these are the features, ever varied, that constitute the beauties, and afford that delight which travellers rarely fail to derive from an excursion on, or along the banks of the Rhine."

MANNERS AND CUSTOMS OF THE IRISH PEASANTRY.

Keens and Death Ceremonies.

The women mix their cries, and clamour fills the fields.
The warlike wakes continued all the night,
And funeral games were played at new returning light.
Dryden.

"An easy death, and a fine funeral" is a proverbial benediction amongst the lower orders in Ireland. Throughout life the peasant is accustomed to regard the manner and place of his interment as matters of the greatest importance; "to be decently put in the earth, along with his own people," is the wish most frequently and fervently expressed by him. When advanced in life, it is usual, particularly with those who are destitute and friendless, to deny themselves the common necessaries of life, and to hoard up every trifle they can collect, for the expenses of their wake and funeral. Looking forward to their death as to a gala given by them to their acquaintances, every possible preparation is made for rendering it, as they consider, "creditable;" their shroud and burial-dress are often provided many years before they are wanted; nor will the owners use these garments whilst living, though existing in the most abject state of wretchedness and rags. It is not unusual to see even the tombstone in readiness, and leaning against the cabin-wall, a perpetual *Memento mori* that must meet the eye of its possessor every time he crosses his threshold.

There is evidently a constitutional difference in the composition of the English and Irish peasant; but this peculiarity may be more satisfactorily accounted for by the prevailing idea with the latter of a future state being a material one, and subject to wants even

more urgent than those of this life! under this impression, shoes, considered a luxury quite unworthy a thought, are believed almost indispensable after death, when it is supposed much walking has to be performed, probably through rough roads and inclement weather. The superstition evidently proceeds from the tenet of purgatory, held by the Romish church; and on this particular, the general belief of the Irish peasantry is somewhat at variance with the representations of their pastors: the priest describes it as a place of fire, but the people imagine it to be a vast and dreary extent, strewed with sharp stones, and abounding in thorns and brambles.

The attachment to particular burial-places arises from the same cause; and the anxiety amongst the vulgar to be interred with their relatives, bestows even on death a feeling of social interest. A remarkable instance occurred some time since. An old beggar-woman, who died near the city of Cork, requested that her body might be deposited in White Church burial-ground. Her daughter, who was without the means to obtain a conveyance, determined herself to undertake the task, and, having procured a rope, she fastened the coffin on her back, and, after a tedious journey of more than ten miles, fulfilled her mother's request.

Separate interests (as in the case of marriage) often cause disputes at funerals; and as no acknowledged rule exists in such cases, a battle usually ends the dissension, and the corpse is borne away in triumph by the victorious party to a cemetery, perhaps twenty miles distant from that originally intended.

I remember once overhearing a contest between a poor man and his wife, respecting the burial of their infant. The woman wished to have the child laid near some of her own relations, which the husband strongly opposed, concluding her attachment to her

friends was superior to her love for him; but he was soon convinced by his wife's argument, that as her sister had died in child-birth only a few days previous, she would afford their poor infant suck, which nourishment it might not have, if buried elsewhere.

Another melancholy instance of superstition occurred in the case of a woman, who presented several beggars with a loaf and porringer, that her deceased child might not want a porringer or bread in the next world. She accounted for her knowledge of the wants of an after-state, by saying that a very good man, who used to have occasional trances, in which it was known his soul left his body and became familiar with disembodied spirits, returning to its former habitation after a short absence, told her, on his recovery from one of these fits, that children, dying at an early age, whose parents' neglect deprived them of the use of a porringer, were obliged to lap milk out of their hands; whilst others, who were provided in life with one, had a similar article prepared for their comfort in a future state; and "now," continued the woman, as she bestowed her last loaf and porringer on a mendicant, "my mind is at ease, for my poor child is as happy as the best of them."

Many other anecdotes of the same nature might be related, but these are sufficient for the purpose of illustration.

The belief also of a similarity between spiritual and mortal existence extends, not merely to necessities, but to points of etiquette.

It is a general opinion amongst the lower orders, that the last buried corpse has to perform an office like that of "Fag" in our public schools by the junior boy, or at a regimental mess by the youngest officer; and that the attendance on his churchyard companions is only relieved by the interment of some

other person. The notion may seem too absurd, yet serious consequences have sometimes resulted from it; and an instance comes within my recollection where two funerals, proceeding to the same burial-ground, arrived within view of each other a short distance from their place of destination. Both immediately halted, and a messenger was mutually despatched to demand precedence; their conference terminated in blows, and the throng on both sides forsaking the coffins, rushed forward, when a furious contest ensued, in which some lives were lost.

It is a prevalent notion that the ghost of a stranger is seldom well received by the ancient possessors of a churchyard, particularly if it has long been reserved to a clan or sept, when the *cuggeriegh*, or intruder, is sadly annoyed by his associates. There is in this a strange variation between life and death in the Irish character, as the trait of hospitality towards strangers is proverbially predominant while living.

When priests, or others noted for their sanctity, die, their graves are resorted to for some of the clay, which is mingled with water, and drunk for the cure of various diseases.

The wake of a corpse is a scene of riot rather than of mourning. The body lies exposed in the coffin for two or three nights previous to interment, surrounded by many candles, and with the face uncovered. To avert misfortune arising from the death of the heads of families, when a man dies his head is placed at the foot of the bed; but women are allowed to remain in the usual position. In the evening a general assembly of the neighbours takes place, when they are entertained with whiskey, tobacco, and snuff. On these occasions songs are sung and stories related, while the younger part of the company beguile the time with various games and sports, such as blind-man's buff, or hunt the slipper. Dancing, or rather

running in a ring, round an individual, who performs various evolutions, is also a common amusement; and four or five young men will sometimes, for the diversion of the party, blacken their faces, and go through a regular series of gestures with sticks, not unlike those of the English morris-dancers.

An Irish funeral-procession will present to the English traveller a very novel and singular aspect. The coffin is carried on an open hearse, with a canopy supported by four pillars. It is adorned with several devices in gold, and drawn by four horses, and is, perhaps, more impressive to the beholder than the close caravan-like conveyance used in England. But in Ireland what is gained in solemnity by this principal feature, is suddenly destroyed by the incongruity of the rest of the train, generally composed of a few postchaises, the drivers in their daily costume of a long great coat and slouched hat. In addition to these, I have seen a gig in which the clergyman (I imagine, by his being equipped in a white scarf and hat-band) drove a friend; afterwards came a crowd of persons of all descriptions on foot. No noise, no lamentations were to be heard; but the figure in the flowing white scarf brandishing his whip, gave it very much the effect of an electioneering procession.

The open hearse is common throughout Ireland, and that used by the poorer classes becomes perfectly grotesque, from the barbarous paintings of saints and angels with which it is bedizened. The concourse of persons who attend the funeral of an opulent farmer, or a resident landlord, is prodigious. Not only those to whom the deceased was known, but every one who meets the procession, turns to accompany it, let his haste be ever so great, for a mile or two, as it is accounted unlucky, or unfriendly, to neglect doing so.

The funeral of a gentleman acknowledged as the

head of a clan (now an event of rare occurrence, and almost solely confined to the county Kerry) is one of those sights it is impossible to behold without feeling sublime sensations. The vast multitude, winding through some romantic defile, or trailing along the base of a wild mountain, while the chorus of the death-song, coming fitfully upon the breeze, is raised by a thousand voices. On a closer view, the aged nurse is seen sitting on the hearse beside the coffin, with her body bent over it; her actions dictated by the most violent grief, and her head completely enveloped in the deep hood of her large cloak, which falls in broad and heavy folds, producing altogether a most mysterious and awful figure. At every cross-road, such roads being considered symbolic of their faith, there is a general halt; the men uncover their heads, and a prayer is offered up for the soul of their departed chief.

The Irish funeral howl is notorious, and although this vociferous expression of grief is on the decline, there is still, in the less civilized parts of the country, a strong attachment to the custom, and many may yet be found who are keeners, or mourners, for the dead by profession.

In the fourth volume of the Transactions of the Royal Irish Academy, the musical notation of one of these lamentations may be seen; and Dr. O'Brien, in his Irish Dictionary, describes the *keen* as—"a cry for the dead, according to certain loud and mournful notes, and verses, wherein the pedigree, land, property, generosity and good actions of the deceased person and his ancestors, are harmoniously recounted, in order to excite pity and compassion in the hearers, and to make them sensible of their great loss in the death of the person whom they lament."

Having a curiosity to hear the Keen more distinctly sung than over a corpse, when it is accom-

panied by a wild and inarticulate uproar as a chorus, I procured an elderly woman, who was renowned for her skill in keening, to recite for me some of these dirges. This woman, whose name was Harrington, led a wandering kind of life, travelling from cottage to cottage about the country, and though, in fact, subsisting on charity, found every where not merely a welcome, but had numerous invitations, on account of the vast store of Irish verses she had collected, and could repeat. Her memory was indeed extraordinary; and the clearness, quickness, and elegance with which she translated from the Irish into English, though unable to read or write, is almost incredible. Before she commenced repeating, she mumbled for a short time, probably the beginning of each stanza, to assure herself of the arrangement, with her eyes closed, rocking her body backwards and forwards, as if keeping time to the measure of the verse. She then began in a kind of whining recitative, but as she proceeded, and as the composition required it, her voice assumed a variety of deep and fine tones, and the energy with which many passages were delivered, proved her perfect comprehension and strong feeling of the subject, but her eyes always continued shut, perhaps to prevent interruption to her thoughts.

From several keens which I took down from this woman's dictation, I select the following; it will, doubtless, appear to the English reader an odd combination of the sublime and vulgar. It was composed on Sir Richard Cox, the historian, who died in 1733; the first verse presents a curious picture of Irish hospitality.

"My love and darling, though I never was in your kitchen, yet I have heard an exact account of it. The brown roast meat continually coming from the fire; the black boilers continually boiling; the cock of the beer barrel for ever running; and if even a score of men came

in, no person would inquire their business; but they would give them a place at your table, and let them eat what they pleased, nor would they bring a bill in the morning to them.

"My love and friend, I dreamed through my morning slumbers, that your castle fell into decay, and that no person remained in it. The birds sung sweetly no longer, nor were there leaves upon the bushes; all was silence and decay!—the dream told me that our beloved man was lost to us—that the noble horseman was gone! the renowned Squire Cox!

"My love and darling, you were nearly related to the Lord of Clare, and to O'Donovan of Bawnlehan; to Cox with the blue eyes and to Townsend of White Court. This is the appointed day for your funeral, and yet I see none of them coming to place even a green sod over you."

Keens are also a medium through which the disaffected circulate their mischievous principles, and this they do without much attempt at concealment, the Irish language being a sufficient cloak for the expression of seditious sentiments; few, if any, of the gentry being acquainted with it.

Those criminals whose lives have been forfeited in the cause of rebellion, derive no small consolation from the idea of martyrdom, which they fondly imagine they have attained, and in this they are encouraged by the popular voice, apostrophizing their shade as that of an hero and a patriot. Their countrymen are called upon to revenge their death, and to recover the estates of their Milesian ancestors, whose spirit has alone descended to them; on that spirit and what it will achieve, many verses are bestowed. It is compared to the mountain-eagle, that even in bondage, the hand of strangers could not tame; to the mountain-torrent, that would suddenly burst forth with overwhelming inundation, and destroy the lands where the cold-hearted Saxons, as they call them, revelled.

[Abridged from CROFTON CROKER's *Researches in the South of Ireland.*]

Mustard Seed.—"A grain of mustard seed" is said in the parable to be "the smallest of all seeds; but when it is grown up, it is the greatest among herbs, and becometh a tree, so that the birds of the air come and lodge in the branches thereof." The mustard of our own country is very far from answering this description: but there is in the East a species of *sinapi*, to which it, no doubt, alludes: it is called by Linnæus *Sinapi crucoides*. Its branches are real wood, as appears from a specimen once in the collection of Sir Joseph Banks. Lightfoot, Buxtorf, and others, quote the Jewish Rabbies to the same effect, whose testimony cannot be suspected of partiality to the New Testament. In the *Talmud of Jerusalem* it is said, "There was in Sichi a mustard-tree, which had three branches, one of which, being cut down, served to cover the hovel of a potter; and yielded three *cabs* of seed." The Rabbi Simeon says, "he had in his garden a shoot of the mustard-tree, on which he climbed as if on a fig-tree." These statements are, at least, sufficient to show that we should not form a judgment of eastern herbs by those which are familiar among ourselves.

RUSSIAN PEASANTRY.

It is a remark as true as it is trite, that, to appreciate aright the blessings that cluster round our homes, we must leave them. Much may be gathered from the reports of others, yet the conviction is less deeply impressed than when the result of personal experience. None but he who has felt them, can tell the fond yearnings of heart with which the resident in a foreign country recalls the scenes of his native land. He may engage in the bustling pursuits of commerce; he may abandon himself to the allurements of an intellectual profession; he may mingle in the society of the learned or the gay; yet still will the remembrance of the home, the quiet, perhaps humble home, of his childhood, often fill his eye with no unmanly

tears, and make his heart overflow with a pure feeling which not all

The dreary intercourse of daily life

can deaden or repress. His career may be brilliant, but they who would have hailed his success are far away, estranged, perhaps, by protracted absence, or gathered to their fathers.

The friends that throng around him may be kind and true, but they are not like the friends of his own country, and of earlier years. Friendship, like our own oak, will but ill bear transplanting,—it loves its own soil, and grows best round our homes: there it strikes deepest root, and most widely extends its welcome shade; there its outstretched arms yield a sure refuge when storms are abroad; but he that would seek their shelter must not widely range. Who would not wish they should droop over his last place of sleep? How different is it from the unstable exotics, too often cherished for it, that rear their feeble stems, and expand their showy flowers amidst the artificial scenes of after-life; things for sunshine and calm, bought at too dear a price, and withered by a breath.

At home, hedged in by household comforts and girt by a friendly circle, the affections of an individual may find ample scope, nor feel a wish to roam. But torn from thence, and settled in a foreign country, they take a wider range. Every object connected with the land of his nativity shares his fond regard. Is it England? with what honest pride he views her stately pre-eminence among the nations; her glorious institutions,—her dignified rank in arts and sciences, —the mighty names that adorn her literature, to which every nation, by translations, has paid, and is daily paying, its homage. With what delight he dwells on the matchless beauties of her rich and

cultivated scenery. "Distance lends enchantment to the view;" the excrescences with which time may perhaps have incrusted some of her venerable establishments, are, to his eye, lost in the colossal grandeur of the whole, that throws its broad shadow over every minor blemish. He sees but what is lovely; he sees not the squalid want that too often haunts the streets, nor the cheerless poverty that infests the hovel of the poor; he thinks but of the clean, tidy, active artisan, and his neat, comfortable home,—the sturdy, healthy peasant, and his snug whitewashed cottage, with its thatched roof, its paddock and its garden.

Snug, neat, comfortable; we love to dwell upon the words:—they are English, purely, exclusively, English,—words it were vain to attempt to translate into another tongue,—the attributes of qualities that love to nestle round the Englishman's fire-side, and are vainly sought elsewhere. Would he feel their full force, he needs but look around him, and with the tear of gratitude glistening in his eye, compare his own lot, humble though it may be, with that of the Russian serf, whose cheerless dwelling we are about to describe.

But before entering upon this subject, let us beg you, reader, to pardon this long preamble of one, who, himself a stranger in a foreign country, animated by the warmest filial love to his father-land, and valuing his birthright as an Englishman, has given vent only to the overflowings of his own heart; and who, if disappointed hopes should prompt in your mind one wish to wander, would urge you to remember, that where one individual has returned to his home a man of wealth, thousands of broken-hearted have hidden their untold miseries in an exile's grave. Of these some simple tales of sorrow might be told, the recital

of which, like the moaning of the wintry wind about your happy dwelling, would make you draw your household comforts more closely around you, and bless the kind Providence that placed and shelters you where you are.

Not only the houses of the peasantry, but even most of the country seats of the Russian nobility are built of wood. The latter are not unfrequently constructed with considerable elegance, and externally adorned with taste, but they are wholly destitute of what in England are considered, the little essential luxuries of refined life. The former are not sprinkled over the face of the country, as are the cottages of the English labourers, but are grouped together in numbers of from 10 to 200, and ranged along the road in straggling lines; we dare not call them villages, the term is endeared to our remembrance by too much that is lovely, to furnish so gross a misapplication of the word. Their novelty may at first interest, but this feeling is soon lost in the incessant repetition of the same object.

The same in internal arrangement and external appearance, and differing only in minor details, the description of one Log House may serve to give a very tolerable idea of the whole, individually or collectively.

It is constructed of trunks of trees stript of their bark, and placed horizontally one upon the other, the ends morticed together, and the interstices caulked with dried moss. The gable end of the high pointed roof is always to the front, and overhangs the wall two or three feet; it is generally covered in with bark or planks, on which is laid loose straw, secured by long poles fastened across it. In some few places they have attempted the luxury of thatch. To each house is annexed a spacious yard, surrounded by open sheds for cattle, the whole closed in by large

folding doors that open upon the road. To the front wall of each house is attached a board, on which is painted a rude representation of the instrument which its occupant is bound to contribute in cases of fire, in order to aid in extinguishing it.

The interior accommodation is limited to one room, entered from a dark passage by a very low door. Against the walls of rudely-hewn timber, unplastered and grimed with smoke, are ranged benches, originally unplaned, but to which long use has given a greasy smoothness. On the floor, formed of loose thick boards, with gaping crevices between, lies the accumulated filth of years.

In one corner hangs the sacred lamp lighted on festivals before the consecrated pictures of the patron-saints of the family. These representations, as may be well imagined, are in general miserably executed. Sometimes the whole surface is incrusted with a thin plate of embossed silver, through which the face and hands of the figure are alone allowed to appear. They are frequently decorated with palm-branches, or votive offerings, such as gay-coloured embroidered ribbons and wreaths of artificial flowers. The serf never enters the room without bending to these his "Penates," crossing himself reverently, and murmuring an ejaculatory prayer; nor will many of them slake their thirst with a draught of water without doing the same. Their genuflexions after every meal are frequent and prolonged. Some of the more devout will prostrate themselves on the floor, or touch it with their foreheads, ten or twelve times in the course of their devotions.

Nearly one-fourth of the apartment is occupied by an enormous stove, the flat top of which is the favourite sleeping-place in Winter, where man and child, matron and maid, lie huddled together in a

mass, divested only of their warm out-door clothing. They have no blazing hearth around which to gather in friendly chat, during the long dreary evenings of Winter; sleep is the only luxury a peasant enjoys, and in this he indulges, night or day, whenever he can steal an hour from his labours. The coarse black bread, their sour cabbage-soup, and their boiled buck-wheat, are all prepared in this oven. It also answers the purpose of a vapour-bath, where such is not to be found. The method of using it is this: the patient, divesting himself of his clothes, crawls into it, carrying with him a vessel containing water, which he throws at intervals upon some bricks that have been heated for the purpose; the mouth of the stove is closed, and in it he lies, sweltering in the steam thus generated, and rubbing himself vigorously with a kind of leafy besom of birch-branches, till profuse perspiration bursts from every pore. When he can no longer endure it, he creeps out of the oven, and rolling himself in his long sheep-skin coat, gains the snuggest, that is to say, the warmest corner on its top, and after a few preliminary scratches, indulges in his primest comfort, a long sound sleep.

In very many places there are no chimneys, and the smoke is allowed to escape through crevices in the roof, or a hole in the wall; consequently, whenever the stove is heated, the apartment is filled with dense volumes of stifling smoke, which render respiration actually impossible to those unaccustomed to it. The only alternative is to lie down on the floor till the fume has passed away.

The culinary utensils are of the most primitive kind; a few unglazed black earthen pots of various sizes, in fashion such as might have been those in use in the days of Rurick, are all they possess. Plates, knives and forks, are very rarely to be found among

them, nor are they much needed. On feast-days, (when it is indulged in on a large scale,) the meat is cut in pieces with the huge family knife, and placed upon the middle of the table on a platter, from which each individual helps himself with a little wooden spoon or ladle with which he is provided.

Near the stove is suspended an earthen vessel for water, resembling a double-spouted tea-pot, and beneath this is a tub, into which is thrown the dirty water, and any filth that is not destined to rot upon the floor. When he washes, it is here the peasant does so, by pouring the water from the vessel above, and allowing it to trickle over his hands and face into that below; a sort of family towel hangs near, and is used for all purposes. By-the-by, when clean, that is to say, when new, some of these towels are really pretty; they are sometimes showily ornamented with fringes of open lace-work, coarsely executed, but, nevertheless, not inelegant in its design. The candles in use are home-made, and being composed of unpurified tallow, emit the most nauseous smell; sometimes for these is substituted an iron dish, in which is burnt refuse fat, tallow, or coarse oil; the wick is a piece of rope. In the ruder hovels neither of these are found; instead of them they make use of long strips of wood, like laths, which are stuck in a crevice of the wall, or fixed in a frame, made of an upright of wood, in the top of which are three diverging prongs of iron, between which the lath is inserted,—such an one is represented on the right hand of the engraving we have given.

The uncertain flickering light of these resinous torches produces a highly picturesque effect,—now feebly glimmering through the gloom that invests every object, and then throwing its brilliant glare on the savage scene and the wild figures of the peasantry.

The dress of the common serf consists of a red print shirt, reaching half-way down to the knees, with large gussets of blue under the arms; beneath this are worn wide trousers of canvas, or striped ticking; from the knee downwards, and round the feet, are rolled strips of canvas linen cloth, bound with a cord. The shoes are of birch bark, plaited in shreds of about three-fourths of an inch in width, much in the way of the old-fashioned list-slippers; they are immensely large and very ugly, but well calculated for winter wear. In summer, above this dress he wears a "caftan" of coarse gray drugget, of the kind used in England for covering carpets, but of much inferior quality. In winter, a long sheep-skin coat, called a "shooba," belted round the waist by a sash of crimson worsted. His hat is conical, with a broad brim curled up all round; it is generally adorned with leaden buckles, and occasionally with the end of a peacock's feather. The winter cap is high, square, and stuffed with feathers for warmth; it is of red or blue cotton-velvet, with a band of dark fur round the brows. The whole apparel of the female is comprised in two articles,—an under garment of linen with wide sleeves, reaching to the elbow, and a skirt of printed cotton or of plaid stuff, of the gayest colours; shoes and stockings are far from general. If unmarried, the hair is braided in two tresses, which hang down to the middle of the back,—the ends are tied with a bow of red ribbon; if a wife or widow, she wears, instead of bonnet or cap, which are never seen, a cotton handkerchief bound round the head. In some districts the women wear a kind of coronet, embroidered with various devices in different colours, and sometimes with beads; this varies in almost every government or province; in some it is high and pointed, rising

like a horn over the brows, in some crescent-shaped, in others square.

The peasant men, of the better class, are habited in precisely the same style, excepting that the coarse gray caftan is replaced by one of finer blue cloth, and the bark shoes are exchanged for strong leather boots.

On gala days the women wear, instead of the ordinary skirt, a crimson cotton dress, called a "sarafan," which is ornamented with a stripe of gold embroidery down the front and round the edges. The head-dress is also richly worked in gold or silver upon a crimson ground. This vestment is, of course, expensive, and only within the reach of the comparatively wealthy; it generally descends from generation to generation as an heir-loom, and is, perhaps, used only three or four times in the year.

This peculiarly national dress is highly picturesque, and sometimes really splendid. By an order of the present empress, dictated by equal good taste and patriotic feeling, it has been adopted as the court-dress of the Russian "ladies of honour;" as such, composed of ample folds of the richest crimson velvet, glittering with the most costly embroidery, and sparkling with jewels, it is one of the most gorgeous that can be imagined. An inquiry into the origin of this dress would be very interesting, but it would involve too long a discussion, and would be misplaced here.

With the political station of the Russian peasant we have nothing to do; the question is altogether out of our province; and as we intend to make his moral and intellectual capabilities the subject of another article, we shall abstain from touching upon them at present; suffice it to say, that the character of the Russian boor, as he has been contemptuously

styled, is ill appreciated, not only by foreigners but even by the Russian nobility themselves. He has been represented as a degraded soulless being, scarcely admissible within the pale of humanity, on whom the blessings of education, and the comforts of civilized life, would alike be thrown away. Degraded in station, and buried in the gloom of ignorance, he may be; yet still, beneath his rude exterior, and within his uncultivated mind, lurk the germs of moral qualities that must raise him to a much prouder station in the great family of man

We do not like that spirit of egotistical exclusiveness, that would arrogate for one class of men a capacity of mind superior to that of another; we love rather to look upon the minds of all men as emanating from one common fountain, the "Giver of every good and perfect gift," although sullied, alas! too soon, and taking their tone from the spot on which they are cast, or the medium through which they are seen; as the rays of light, all flowing from one pure source, are yet reflected of varied hues, according to the surface on which they fall, or are tinged by the substance through which they pass.

If men of eminence are exposed to censure on one hand, they are as much liable to flattery on the other. If they receive reproaches which are not due to them, they likewise receive praises which they do not deserve. In a word, the man in a high post is never regarded with an indifferent eye, but always considered as a friend or an enemy. For this reason, persons in great stations have seldom their true characters drawn till several years after their deaths. Their personal friendships and enmities must cease, and the parties they were engaged in be at an end, before their faults or their virtues can have justice done them.

When writers have the least opportunities of knowing the truth, they are in the best disposition to tell it.—Addison.

THE LATE DR. BURTON.

THE growing anxiety with which everything connected with Religion and the Church is regarded at the present moment, and the value which is properly attached to the exertions of those who are labouring to promote her real interests, cannot fail to have directed the attention of her true friends to the loss which has taken place in the early and unexpected death of Dr. Burton.

He was born in that rank of life which of all others is best calculated to produce men, the blessing of their generation and the glory of their country. His father was the younger brother of a gentleman of considerable property in Shropshire, and was himself engaged in business in Shrewsbury.

He was sent to Westminster about 1806, and placed by Dr. Carey (the present bishop of St. Asaph,) rather high in the school. He never passed through the college, and was removed to Christ Church as a commoner in 1812.

At school, the character which he maintained through life was fully developed. There was much of practical sound sense, much of agreeable liveliness, and those invaluable qualities which make the boy at once the favourite and the guide of his contemporaries, which obtain the approbation and confidence of those in authority, and connect by kindly feelings the master with his scholars. In case of any misunderstanding, Edward Burton would have been the boy through whom his schoolfellows would have communicated with the master, and the master would have rejoiced that such an individual had been selected. His school-life was marked by great and successful application; he worked hard and engaged in every plan which was calculated to combine superior objects of pursuit, with the prescribed studies of the place.

His undergraduate life was very similar to that which he had passed at school; he was always much distinguished at his college-examinations, and when he took his degree, in 1815, he obtained a place in both the first Classes. His manner of life was quiet and respectable; the friend of some few studious persons of his own habits, but known to many, and respected by all. He had entered as a commoner, but at the Christmas of 1813, a studentship was accidentally placed at the disposal of the Dean and Censors by the kindness of one of the canons, and Mr. Burton was selected as the man who would do credit to the appointment; and most nobly did he fulfil the expectations of those who nominated him.

After taking his degree he resided for some years in Christ Church, and engaged in the private tuition of a small number of pupils, while he carried on his preparation for orders, but he always guarded against that which must be veiwed as the bane of our English Universities, that the Bachelors of Arts and young Masters are employed in teaching those who are a little younger than themselves, the details of what is necessary for a degree, instead of carrying on such a system of self-improvement as will fit them for a larger field of literary attainments. From this danger Mr. Burton was enabled to keep himself free, from the easy circumstances of his father, and the conviction that in so doing he was paving the way to greater means of usefulness in his future life.

Before he settled down into the character which he peculiarly honoured, and in which he delighted, that of a parochial clergyman, he took advantage of the state of the Continent, and improved himself by visiting many parts of Europe. His first trip in 1816 extended not beyond a short excursion in Holland and a journey to Paris, but the zeal and

activity, the gaiety and good humour which marked all his undertakings, shone forth particularly in those hours of relaxation when he was engaged in the acquisition of knowledge, and the sight of new objects.

Two years after, in 1818, he undertook a much more extensive tour, including Rome, Sicily, and some portions of Germany. A part of this journey was made with a pupil, a brother of Sir R. Peel, but the larger portion with friends whom he joined; and the gratification afforded by his society, is a topic on which all who ever travelled with him delight to dwell. The examination of all that is worth seeing at Rome very fully engaged his attention, and, after his return, he published a *Description of the Antiquities and other Curiosities of Rome*, a work which has been subsequently reprinted.

On his re-establishment in England after his tour, he entered with zeal and activity on the labours of his profession, and became the curate of Tettenhall, in Staffordshire, serving, during a part of the year, a living in Wiltshire, which belonged to the same incumbent, and of which he took the duty in turn with his rector. It was during this period that he laid the solid foundation for that ecclesiastical erudition by which he was subsequently distinguished, and read over all the early Fathers more than once. This gave him a very decided advantage during the remainder of his most valuable life. He could speak with more knowledge and familiarity on these topics than was possessed by those with whom he communicated, and was enabled to enrich all his publications with information and learning, drawn from the original sources.

In 1825 he married Ellen, the daughter of Archdeacon Corbett, and soon after came to reside in Oxford, for the purpose of carrying on his studies

and publishing his works. The return of one so loved and respected was hailed by all who had known his worth, and by none more than by his predecessor in the Divinity Chair, Dr. C. Lloyd, afterwards Bishop of Oxford, who named him as his chaplain, when he attained that dignity.

Between these two persons a very close and beneficial intimacy had always existed, and that love which was borne by all who had been under the tuition of Bishop Lloyd, while resident as Tutor of Christ Church, was ripened into a friendship which ceased not till the death of that great promoter of the study of Theology in Oxford. Dr. Lloyd was the first Professor of Divinity in that University who had attempted to teach divinity on that plan, which is the only one by which anything can really be taught. He had carried on the Public Divinity Lectures, at which all candidates for orders are obliged to attend, by means of written compositions read in the hearing of the students, in the same manner as his predecessors, but to this he had added two or three courses of private lectures, in which those who attended were expected to prepare themselves to answer questions taken from some book which they were reading, and on which they were examined by the Professor, and instructed by his observations. This produced a sort of new era in the study of Theology in Oxford, and has created an activity in this department, on which all friends of the Church may beg the blessing of God.

During the period of which we are speaking, Mr. Burton was prevailed on to undertake the office of a public examiner, which he fulfilled with the highest approbation, and by his example and influence assisted in enlarging the method of examination, which must always be in danger of becoming technical and contracted, while it is confined to those whose whole

time is occupied in carrying on the education of the place. He likewise filled the office of public preacher, and delivered many of those discourses which have been subsequently printed among his academical sermons.

In 1826 he published his work on the Antenicene Fathers, in which he selected all those portions of their writings which bear on the question of the Trinity, gave them, in a literal translation, with the original text in the same page, and appended such observations as the nature of the quotation seemed to require. This is an invaluable work, and an unanswerable testimony of the faith of the primitive Church on this most important article. During the next year he edited Bishop Bull's works, a task of great labour, for he verified all the quotations, and corrected a vast number of errors which had crept into former editions.

In 1829 he gave his course of Bampton Lectures, "An Inquiry into the Heresies of the Apostolic Age," on which, above all his other literary productions, his fame as a divine must be founded. But it is hardly necessary to dwell on the learning of Dr. Burton; few men in our day have surpassed him in this particular; and, considering his age, and the general turn of his numerous acquirements, few men have brought a larger stock of real professional knowledge to promote the cause of Christianity; but all his labours, as an author, were directed to the promotion of Christian learning; he felt, and knew, with every real friend of our holy religion, that sound Christian learning is peculiarly wanted among a nation of well-informed believers, and he directed his exertions as a professor to the promotion of this object. To this we owe his History of the first Three Centuries, and all the subsequent exertions of his most useful life.

In 1829 it pleased Almighty God to take off, by a death equally unexpected and equally deplored, the predecessor under whom he had been acting as chaplain, and with whom there had always existed a most entire intimacy; and on this occasion the chair, for which the feelings and the judgment of the University had long pointed him out, was at once most handsomely offered him by the Duke of Wellington. His energies were now directed to the work to which he had been called. He felt that the religious tone of the rising generation of churchmen must, in a great measure, depend, under God, on himself; and he was anxious that learning and Christian zeal should combine in rendering the clergy useful to their country.

He carried on the Private Divinity Lectures on the plan which had been commenced by his predecessor, and published the History of the Three First Centuries, in order to aid his pupils in the acquisition of sound and early ecclesiastical history. His life was a very laborious one; too laborious, perhaps, if we merely view it with human eyes, for his exertions have probably shortened his days; but God seeth differently, and the example of every man whose labours have contributed to hasten his own death, will, probably, excite many more to follow his laborious steps. His constitution was never strong; he had, however, generally enjoyed pretty good health till towards the two or three last years of his life, but a growing weakness in the lungs was gradually destroying him, and his immediate death was probably hastened by a little want of care.

The termination of his life was quite unexpected, though those who knew him intimately must have long entertained fears about him. It must have been unexpected even to himself, for he had visited

Oxford, and transacted business there within a week of his decease; indeed, within ten days of that period he had done the whole duty at Ewelme, when he ought to have been in bed. His end was accompanied with much of fever, attending the inflammation on the chest, but his patience and serenity were most extraordinary throughout. Once, and once only, was he the least ruffled, and then only to complain for a moment of the suffocating sensation as almost beyond endurance. On the Sunday before his death, he told his wife that his end was near, and gave directions about his funeral, and various matters; after this he said extremely little; his last articulate words were to the effect that "he felt his faith firm."

The funeral was, according to his direction, strictly private, but exhibited a very touching scene. The church and churchyard were crowded with parishioners in deep and silent sorrow. His parish, Ewelme, in Oxfordshire, was his enjoyment; he had laid out a very large sum in beautifying the interior of the church; he had fitted up the parochial school, and had done more for the benefit of his parish in every way than most men are able to accomplish, whose undivided attention can be devoted to their parochial duties alone. Indeed, this feature in his character contributed peculiarly, in combination with his other qualities, to render his labours as a Divinity Professor singularly valuable. He was not merely the learned divine, but the learned teacher leading his pupils to apply their theology to the practical purposes of the Christian ministry. His personal example proved to the young candidate for orders whose whole heart and soul were devoted to the duties in which he was about to engage, that learning would not merely give a lustre to his acquirements, but contribute to guide him in the paths of spiritual usefulness. He taught the

learned student, by the same most convincing of arguments, that a zealous attention to the sacred duties of his profession would sanctify his previous acquirements to the service of his Redeemer. He combined in a very striking degree the parish-priest with the professor of Theology, and showed that the duties of the one were not only compatible with those of the other, but that they aided and mutually increased the value of each other. He was a blessing to the University, and a blessing to his parish. In him the character of a well-informed and agreeable gentleman was heightened by that of the pious Christian, and all his talents were directed to lead others into the same path of usefulness in which his own steps had trodden; he saw the value of learning, and he tried to induce others to study with the same zeal as had rendered him so conspicuous in his professional acquirements. He felt the value of Christianity and he tried to lead others to the same waters of salvation in which he had so copiously and freely participated, which were his joy in his day of worldly prosperity, and his firm support when the hour of dissolution approached. His death at the present moment may be esteemed a national calamity; but the same power which raised him up, may raise up others to supply the exigencies of the Church, and the example of such a man may be rendered the effective means of exciting many another to follow in his steps. And the merciful God who hath deprived us of one to whom we had looked as a master in Israel, may perform the work which our ignorance had assigned him, and show us that His strength is perfected by our weakness.

To smell a turf of fresh earth is wholesome for the body; no less are the thoughts of mortality cordial to the soul. Earth thou art, to earth thou shalt return.—FULLER.

THE USEFUL ARTS. No. VI.

Spices and other Condiments.

The term *spices* is applied to certain vegetable products which are highly aromatic, or pungent, or both. In all ages, they have been much prized, and the earliest commercial intercourse, of which we have any record, was chiefly carried on for the sake of these commodities. It was not solely as condiments to food that they were sought after; spices were extensively used in religious rites and in funeral ceremonies.

Cinnamon is the bark of a species of Laurel (*Laurus Cinnamomum*) which grows in the south of the Indian Peninsula, but abundantly only in the Island of Ceylon, where it is extensively cultivated. Upwards of 400,000 pounds of this valuable produce are annually exported to Europe, and more than 25,000 persons, it is said, are engaged in Ceylon, either in the culture, or in the harvest. The tree attains a height of from twenty to thirty feet, with narrow leaves of a dark green on the upper, but lighter on the under side. It blossoms in January*. The flowers are fragrant, white, resembling, in size and form, those of the Lilac: they are borne in clusters on long stalks springing from the axilla of the leaves. The fruit is a small berry, which becomes, when it is ripe, a thin shell containing a single seed. The plant sends up numerous suckers the third or fourth year after it has been planted. These shoots are cut when they become from half to three-quarters of an inch in diameter: the bark is stripped off and is freed from the outermost skin or epidermis; the wood is used only for fuel.

Mace and Nutmeg. The Nutmeg is the seed of the *Myristica moschata*, and Mace is a soft fleshy coat enveloping the seed; this coat is of a bright crimson colour, and as the fruit opens when it is ripe, the appearance of it on the tree is extremely pleasing. The plant is a native of the East Indian Archipelago: it is *diœcious*, and resembles the Laurel in its appearance. The seed has an outer skin of a black colour, which is easily detached, when the seed is quite dry; artificial heat is employed to accelerate this object, and to *kill* the vegetative power. The nutmeg yields, by pressure, an oil used in medicine.

Cloves are the dried flower-buds of the *Caryophyllus aromaticus*, a large handsome tree of the myrtle tribe, and a native also of the East Indian Archipelago. They are beaten from the tree when the *calix*, or cup, expands, but before the petals open: the former organ is easily recognised in the spice, and the central round knob consists of the unexpanded petals, and not of the fruit, as is erroneously supposed. Upwards of 50,000 lbs. are annually consumed in Britain. Cloves yield abundance of essential oil, of a strong pungent aromatic flavour, to which that of the spice is due. This oil is extracted either from the fresh-gathered buds by pressure or by distillation: it is used in medicine.

Allspice derives its name from its scent and flavour being supposed to embody those of several others, and for which it might be substituted. Allspice is the dried unripe berry of a tree, a species of myrtle, which is a native of both the East and West Indies. The plant is known by the name of Pimento, or Jamaica Pepper.

Pepper is a generic name of several different productions. *Black* and *White Pepper* are the dried seeds, ground to powder, of the *Piper nigrum*, a creeping plant of the equinoctial regions of Asia and America. The two spices only differ in the latter being blanched by soaking in water, and having the black skin rubbed off; but a great deal of White Pepper consists only of the inferior shrivelled seeds, which, falling from the tree, have been blanched by exposure to the air and sun. Long Pepper is only a variety of the common Pepper-tree, the racemes of the fruit being closer, and are imported whole.

Cayenne Pepper is made by grinding the dried fruit of the *Capsicum baccatum*, or Bird-Pepper, a native of both Indies. The fruit is a small fleshy capsule, of a brilliant scarlet, and of intense pungency, as every one knows from the pepper in question. There is a kind producing very small species, known by the name of *chilies*, which is the strongest in its perfect state, and which forms an important ingredient in West India pickle. Though it is the fruit which is used for making Cayenne pepper, yet the seeds are equally, if not more, pungent. The plant is

* That is, a little after Midsummer, the country being in the Southern hemisphere.

common in our green and hot-houses, and even in this climate the fruit is perfected, and is little inferior to that imported.

It should be mentioned, that though so powerful a stimulant, Cayenne pepper is considered more wholesome than the common black pepper.

Ginger is the woody root of the *Zingiber officinalis*, a native of south-eastern Asia and the adjoining islands, and long since cultivated in the West Indies. The plant is nearly allied to the arrow-root tribe, and somewhat resembles the Indian-shot. The roots are sorted, washed, scraped, and dried in the sun. The young roots make an excellent preserve, and a great deal is imported in that state. Ginger is a valuable medicine, and is as wholesome as so powerful a stimulant can be.

Mustard is an infusion of the seeds ground to powder of the *Sinapis nigra*, an indigenous plant, but also cultivated for the purpose. On the Continent it is usual to mix tarragon and several other herbs with mustard to flavour it; here it is generally only prepared with a little salt and water, and perhaps some vinegar. It is an extremely wholesome condiment, and is also a most valuable medicine; the whole seeds have lately been used as such, and an infusion of the powdered mustard in hot water is a speedy and safe emetic. It is also used when applied externally in the form of a plaster, to excite inflammation.

Oils are a most important class of vegetable, as well as animal, fluids. Vegetable oils are of two kinds,—*fixed* and *volatile*, easily distinguished by the following obvious characters: if a piece of paper be moistened with a fixed oil, it becomes more transparent, or what we call *greasy*, and never again loses that quality: whereas if a volatile oil be used in the same way, it dries up entirely after a time, leaving no trace behind it. The volatile oils are extremely numerous; it is to them that most parts of plants owe their aroma, fragrance, pungency, and other properties affecting the taste and smell.

Fixed oils are obtained principally from the seeds by pressure. The only one that we have to notice here is

Olive Oil. The Olive *(Olea Europea)* is extensively cultivated in the south of Europe, solely for the sake of the oil which is obtained from its *fruit*. This is a small green

oval berry, containing a hard stone in which are two seeds. The frui must be gathered a little before it is quite ripe; the olives are spread on the floor of a room, and left for

THE OLIVE OIL MILL.

several days to dry and to ferment slightly: they are then crushed in a mill and the mass put into bags made of rushes or of coarse canvass, which being subjected to pressure in a screw press, the oil flows out and is received

into proper vessels, which are half filled with water, on the top of which the oil floats and is easily skimmed off.

Where the process is carefully performed, the stone of the berry is not broken when the fruit is first put into the mill, the mill-stones being set wide enough apart to avoid doing so, and the oil first drawn off is of superior quality. After all this is expressed, the mass, stones and all, is either returned to the mill and the stones are broken, or the same effect is produced by mixing up the mass with boiling water and increasing the power of the press; by repeating this operation, not only a second, but even a third quality of oil is obtained.

The best oil is made in the neighbourhood of Aix, in France; that consumed in England is produced principally in Tuscany or the kingdom of Naples, though a great deal is also brought from Spain, and some from the Ionian islands. In our country, as an article of food, it is only a luxury used by the middling and upper classes, and the quantity consumed, therefore, is not great; about 5000 tons annually being the average, of which a considerable quantity is required in the woollen manufactures, and other arts; but in the countries which produce the olive, the oil constitutes a large proportion, in some way or other, of the food of the people, and is an absolute necessary. Olive oil is also employed to burn in lamps, an application of it which is forbidden by law in this country. To fit it for this latter use, the oil of the inferior quality is mingled with about a fiftieth part in weight of strong sulphuric acid, and water being added, the whole is well stirred together: in a few days a sediment of a charcoal settles to the bottom, and the oil is decanted off clear.

The refuse of olives, after all the oil is obtained from it, is given to hogs to fatten them, is burnt as fuel, or used as a manure. The unripe fruit is also pickled in salt-water flavoured with some spice, and is eaten after dinner by many persons in Britain, but much more abundantly on the Continent, to improve the flavour of certain wines.

In other countries, many other oils besides that of the olive are used for food; as for example, nut-oil, the oil of the filbert and of the beech; poppy-oil, rape-seed oil, oil of sesamum, and many others. Several of these are used in the arts in England, and will be subsequently noticed.

ULTRAMARINE.

Ultramarine is manufactured from the mineral called *Lapis-lazuli, Azure-stone,* or *Lazulite.* The mineral is of an azure blue colour in various shades, and generally accompanied with white or clouded spots. It is opaque, and in some parts is sufficiently hard to strike fire with steel.

Lapis-lazuli is principally brought from Persia, Natolia, and China; it is also found in Siberia and Tartary, and it has been discovered in Germany, and among the ruins of Rome. Some years ago, this stone was much used for rings, and various ornamental parts of dress, as it will take a very high polish. It was also cut into ornamental vases and snuff-boxes, and before the French revolution it was imported into that country from the Persian Gulf, for the inlaying of decorated altars. For the making of ultramarine, those pieces of Lapis-lazuli are selected which contain the greatest proportion of blue substance. These are burned or calcined, reduced to a fine powder, made into a paste with wax, linseed oil, and different resinous matters, and afterwards separated by washing. The powder that is left in this operation, which requires much time and great attention to perform, is ultramarine.——*Cressingham Rectory.*

AN EAGLE'S NEST.

Some of the larger birds of prey, particularly when they have their young to provide for, are in the habit of collecting an over-abundance of provisions on the high rocks where their nests are situated. A curious account of one of these Eagle nest-larders is related by a gentleman who was visiting at a friend's house in Scotland, near which he went to see a nest, which, for several summers, two Eagles had occupied; it was upon a rock, or a hill. There was a stone within

a few yards of it, about six feet long, and nearly as broad, and upon this stone almost constantly, but always when they had young, the gentleman and his servants found a number of grouse, partridges, hares, rabbits, ducks, snipes, ptarmigans, rats, mice, &c., and sometimes kids, fawns, and lambs. When the young Eagles were able to hop the length of this stone, to which there was a narrow road hanging over a dreadful precipice, the Eagles, he learned, often brought hares and rabbits alive, and placing them before their young, taught them to kill and tear them to pieces, as a cat brings live mice to her kittens, and teaches them to kill them. Sometimes, it seems, hares, rabbits, rats, &c., not being sufficiently weakened by wounds, got off from the young ones, while they were amusing themselves with them; and one day a rabbit escaped into a hole, where the old Eagle could not find it. The parent bird, another day, brought to her young ones the cub of a fox, which, after it had fought well, and desperately bitten the young ones, attempted to make its escape up the hill, and would, in all probability, have accomplished it, had not the shepherd, who was watching the motion of the Eagles, with a view to shoot them, which they do with bullets (Swan-shot not being able to penetrate their feathers), prevented it.

As the Eagles kept what might be called such an excellent store-house, whenever visiters came unexpectedly, the owner said that he was in the frequent habit of sending his servants to see what his neighbours the birds had to spare; and that they scarcely ever returned without some dainty dishes for his table, game of all kinds being rather the better than the worse for being kept a certain time. When the gentleman or his servants carried off things from the shelf or table near the nest (for it was a work of great

hazard to approach the nest itself), the Eagles lost no time in bringing another supply; but when they did not take them away, the old ones loitered about, and were very inactive, amusing themselves with their young, till the stock of food had nearly come to an end.

While the hen Eagle was hatching, the table or shelf on the rock was generally kept well furnished for her use; and when she was in that state, or the Eaglets very young, the male bird generally tore a wing from the fowls for her, or a leg from the animals captured. These Eagles, as is generally the case with birds that are not gregarious, that is, which do not live together, or assemble in flocks, were faithful to each other, and would not permit even their young after they had grown up to build a nest, or live near them, but drove them off to a considerable distance. This gentleman did not learn whether these Eagles were in the habit of sparing lambs, kids, &c., in their own immediate neighbourhood, which it has been said they do in some places. Thus, in the Shiant Islands, a cluster of wild and retired rocks, situated amongst the Hebrides, or Western Islands of Scotland, the natives assert that the Eagles, which are, or rather were, very numerous there, particularly in the breeding season, scrupulously abstained from providing their young ones with animals belonging to the island in which they had taken up their abode, invariably transporting them from neighbouring islands, often some miles distant. Their mode of catching the mountain deer, was by pouncing down and fixing their talons between the poor animals' horns, flapping at the same time with their powerful wings, which so terrified the deer, that they lost all command over themselves, and setting off at full speed, usually tumbled down some rock, where they were either killed, or so disabled, as to become an easy prey to the Eagles.

[Stanley's *Familiar History of Birds.*]

THE RHINE.

The Hochkreuz, or High Cross, at Godesberg.

The village of Godesberg stands in the immediate neighbourhood of the celebrated "Seven Mountains." . . . . . It is seated at the foot of a mountain of the same name, which has its summit crowned by the ruins of an old castle; its distance from Bonn is about four miles, and shortly before reaching it the traveller passes the curious monument which is call d The Hochkreuz. This cross is thirty-six feet in height, and is represented as a work well worthy the attention of the lovers of antiquity. Its origin is disputed. Some say that it formerly existed in the market-place of the ancient Bonn, and others that a lord of Hochkirchen having killed a knight in a duel on this spot, was condemned by the Archbishop Theodoric of Heinsberg, to erect this cross,—which thence derived the name of Hochkirchen Cross, as it was anciently called.

"These two opinions," says Beaunoir, "appear neither of them to be correct, and they are formally contradicted by the Chronicles of Cologne, which afford the following explanation on the subject of this monument.

"In the year 1333, the Elector Walham of Juliers, caused to be erected the great Cross between Bonn and Godesberg."

In the mountain of Godesberg there is a mineral spring, known by the name of the Draitscher Quelle, whose virtues have been demonstrated by a treatise from the pen of a learned German doctor. When they were discovered, towards the close of the last century, every preparation was made for converting

them to the most advantageous use. "The roads leading to the village have been repaired," says a French writer of that period,—"a large building has been erected at the expense of the prince, and arrangements have been made for uniting in this spot all the delights and conveniences which can be desired. How beneficial then will this new establishment become to the village of Godesberg, situated at the foot of the mountain, as well as the electoral residence, which is distant but half a league!" The extravagant praises which this writer bestows upon the spring, and the advantages of its locality to invalids, seem curious at the present day; like many other projects of a similar kind, the scheme of converting it into a second "Spa," was not attended with the success which its authors desired. A late traveller thus notices it: "Great pains were taken a few years ago to establish it as a regular watering-place, but it does not seem to have met with much success."

The Castle of Godesberg is an old ruin "rearing its jagged crumbling top out of the thickets that surround its base." Its construction is evidently of an ancient date, and is supposed to be the work of the Romans. The Chronicles of Cologne tell us, that during the famous "thirty years' war," this castle, containing a garrison of Dutch troops, which had been placed in it by the archbishop elector of Cologne, after his conversion to protestantism, made a vigorous resistance to the troops of Ernest of Bavaria, who had been nominated the new archbishop; and that it was only taken by mining.

Tradition is of course busy concerning the origin of this structure, which is generally regarded as one of the most interesting monuments on the Rhine. The emperor Julian the Apostate is commonly presumed to have been the founder; he is alluded to as a

stranger king who invaded the country in some early age, and with the assistance of the demons whom he served, and to whom he built a temple and offered human sacrifices, carried all before him, till the arrival of the ministers of the Cross. On this event, the fiends fled in dismay, and left their apostate protégé to his fate." It is supposed, that this tradition is a sort of fabulous record of the subjugation of these districts by the emperor Julian the Apostate, and the subsequent conversion of the inhabitants to the Christian religion, in opposition to which that monarch had so strikingly displayed his zeal.

The village of Godesberg is rather considerable in extent; it is a pretty cheerful place, according to a recent female writer, "where a few days might be passed very pleasingly, with the assistance of the mountains and the Rhine, which here puts on its character of grandeur and beauty for the first time, or throws it off as we should say were we tracing from its source; for all below Godesberg is comparative insipidity." The whole of the lower course of the Rhine, from this spot downwards to the sea, offers scarcely any beauties at all,—certainly none which would be sufficient of themselves to attract the steps of strangers to the Rhine. As a matter of course, it would be idle to look for them in passing along any one of the streams which claim to be branches of the Rhine in the low levels of Holland; but taking the point where it first divides, and ascending its current through the Prussian province of Cleves as far as Dusseldorf, we find the whole country on both sides a dead flat, or nearly so, and even when it reaches the latter town, it does not much improve. "Low natural banks, overgrown with reeds, rushes, and willows, not unlike the navigation among the Zealand Isles,—in some places the view shut out by artificial embankments; flat meadows of deep green,

interspersed with corn-fields, and here and there a poor-looking village, make up, where the banks do not obstruct the view, for the greater part of the lower Rhine. In short, the surface on both sides differs not much from that of Holland, having the disadvantage of not being enlivened with those numerous and neat painted houses, trim gardens, and avenues of trees which, while they adorn, impart an air of cheerfulness and comfort to the inhabitants of the latter country, and which are here wholly wanting. The greater part of the inhabitants who made their appearance in and about the villages on the banks of the Rhine were clothed in rags, half naked, dirty, and sun-burnt—almost to blackness."

The villages themselves are represented as wearing every mark of extreme poverty,—the houses mean, and mostly in a ruinous condition, and surrounded with filth; the women and children, the only persons to be seen, generally ill clad and disgustingly dirty, with "ill-looking vacant countenances, and as brown as Portuguese." The river here runs with a current of at least four miles an hour, and in some of the narrower parts five; the steamers have to struggle hard in ascending against it, and make but a slow passage.

On approaching Dusseldorf, the first hills are seen to make their appearance at a short distance behind it; beyond that town, the river winds considerably for some miles, till, on passing a bend near the little town of Neus, a range of "fine blue hills" show themselves in the distance. A little further on, the traveller obtains the first sight of the famous Siebengeberte, or "Seven Mountains," rearing their blue heads just above the horizon; and here, after having been so long wearied with the everlasting deep green of the meadows, swamps, and dykes of Holland,"

and the willows and rushes on the low banks of the Rhine, he feels a great relief in gazing upon the gentle acclivity which now begins to rise from the water's edge, covered with corn-fields, copses, and plantations of wood, and backed by distant hills wearing an enchanting hue.

The mountain of Godesberg is one of the first which the traveller encounters, in ascending the Rhine, upon its left bank; but it seldom attracts much of his attention, because the famous "Siebengebirte," or Seven Mountains, are close at hand on the opposite side. "The 'castled crag of Drachenfels,' not the highest but the most striking of the Seven Mountains, rises perpendicularly from the river in barren rocky majesty.

"The gray ruin on its summit might be mistaken for a shapeless pile of rock. The mountain of Wolkenburg, or Castle of the Clouds, appears just behind, and the Stranberg, with its round head, out of which peeps the belfry of a little chapel, rises on the right near the river. Behind them you distinguish the heads of the Lowenburgh, the Nieder, Stromberg, the Oelberg, and the Hemmerich.

The Lowenberg, (Lion's Mountain,) which is the highest of the seven, is about 1896 feet in height. The remains of castles are visible on all, and sometimes almost buried in the thick brushwood, the only vegetation they bear. Several of the castles are said to have been erected by the Emperor Valentinian, in the fourth century; and the emperor Henry the Fifth, is charged with burning those of Wolkenburg, Drachenfels, and others. The chapel of St. Peter, on the Stromberg, was built by Didier of Schwartzeneck, a valiant knight of the neighbourhood, in performance of one of those pious vows so often

made by crusaders on a safe return to Europe. There are legends also, as is usually the case, connected with most of these castles; they are carefully detailed in the guide-books, and generally repeated by tourists, "with variations," but there is little to interest in any one of them.

Immediately opposite to the Drachenfels, and on the left bank of the river, is the mountain of Rolandseck, whose steep side descends to the very brink of the Rhine, "in defiance, as it were, of its opposite neighbour;" this mountain too has its ruined castle and a legend, which has furnished the German poet, Schiller, with the materials of one of his most celebrated ballads, though he has chosen to change the scene of action to Switzerland The two mountains of Drachenfels and Rolandseck, form the grand entrance into a deep, dark, and gloomy ravine, through which the contracted river is seen to force its volume of water, with an accelerated current. Soon afterwards its surface expands into a wide reach, tranquil and smooth as a lake, and interrupted only by two beautiful islands; the larger of these is called Rolandswerth, from some former connexion with the same hero, Roland, who has given his name to the mountain close by, or Nonnenwerth, the Island of Nuns, from a celebrated convent which formerly stood on it, and whose "blue minarets and roof" appear (or used to) to the traveller descending the river "embosomed in trees." A view of it may be seen in the engraving to which we have already referred.

This establishment was founded in the early part of the twelfth century, under the auspices of the then archbishop of Cologne; the building which existed before 1773 was then destroyed by fire, and its place supplied by a more magnificent structure than had previously stood on the same site, one

indeed, bearing more resemblance to a palace than a convent. Like other religious establishments in the same territory, this convent has been secularized, and its handsome edifice, with the rich and cultivated domain which the island affords, about sixty English acres in extent, has passed into other hands. Napoleon was the first who doomed it to confiscation, and he was proceeding to carry his intentions into effect, with the full ardour of that hostility which he felt towards all such institutions: his amiable Empress, Josephine, however, interposed in behalf of the poor nuns, who then occupied it, and at her solicitation they were allowed to enjoy a quiet possession during the remaining term of their lives. At the close of the war, in 1815, the island passed into the hands of Prussia; four nuns were all that remained of the ancient sisterhood, and the King of Prussia continued the permission to them to reside in the convent during their lives. When they died, the edifice was sold, and it was afterwards converted into a spacious inn, which, according to the report of tourists, furnished excellent accommodation. Of the salubrity of the spot we have a curious illustration given by a traveller of the last century:—he says that during the whole space of the preceding hundred years, there had died but two sisters who were not *jubilaires*,—an appellation given to those who had been attached to the convent for the period of fifty years,— and in confirmation of this statement he appeals to the mortuary register.

It appears that the speculation of turning the convent into an inn has not been attended with success. A traveller of 1828 tells us, that the proprietor was then endeavouring to dispose of the whole island, of 140 or 150 acres, by lottery, "in which," he says, "we were told that several of our countrymen

in passing had taken tickets; it being so near to England." Unquestionably, the island of Nonnenwerth would form one of the most delightful summer-retreats that could be desired; and as to its nearness to England, it may not perhaps occur to an Englishman, that the distance from London to Nonnenwerth is several miles less than from London to Edinburgh. It is not surprising, therefore, that English adventurers should start for a prize that would give them possession of so lovely a spot. As an inn it was objectionable, on account of the trouble of crossing the water, and less likely to succeed from there being by the road-side, directly opposite to it, a tolerably good and long-established house.

From a later traveller still, we learn that a further change has since taken place.

"I had thought of the lonely tower," says the author of *Slight Reminiscences, &c.*, "the ivied porch, the tall cloisters, and tree of melancholy aspect,—of monastic silence, and deep seclusion, till I had shaped it into something familiar to my fancy. Nothing was ever imagined more unlike the reality. A spacious solid, announcing a substantial quantum of worldly comfort—an inn, I think—at all events, a *pension*, with (as we are told) eight English families living gaily within its walls—sound judges I have no doubt, of the respective merits of Laubenheim and Johannisberg, and lovers, too, as the English generally are, of beautiful nature. But the bare idea of a modern boarding-house, and the convivialities of a table d'hôte, is sudden death to the poetic feeling and to the reveries of an idle dreamer like myself."

PRESUMPTION of every kind supposes *folly* at bottom.—LAVATER.

WHILE time and distance obliterate the misfortunes of life their tendency is to strengthen its charities.

MISSIONARY TRAVELS IN THE INTERIOR OF NEWFOUNDLAND.

Archdeacon Wix has lately published an interesting Journal of his travels in the fulfilment of his arduous duties in the inclement island of Newfoundland, during six months of the last year. The "remote settlements, and the interior of Newfoundland," he says, "are so difficult of access, that many who have been all their lives resident in the island, have not so much knowledge of our settlements along its shore, and of the interior, as they have of the more distant provinces of North America."

My intention (he says) being to visit the southern and western shore as far as the Bay of Islands, or at least, as St. George's Bay, I had thought that it would economize time, if I went through the interior from the Bay Despair, a journey of eight or nine days over land, and returned by the settlements along the coast. I hired, as a guide, Maurice Louis, a Micmac Indian, one of Mr. Cormack's suite, when he had been similarly engaged. Many have compared my own visitation to the excursion of Mr. Cormack, an enterprising individual whom I remember having seen at St. John's, when I visited Newfoundland in 1827. It has not, I should imagine, been very dissimilar: and it would, indeed, be a matter of regret, if the zeal of a Missionary could not induce him to make as much exertion, and to endure as much privation, as others would brave in the pursuit of philosophical research, or the gratification of mere curiosity.

Saturday, April 4.—I started at half-past six into the interior. Two Indian squaws accompanied us, and two other Indians, as twenty deer, some of which they wanted to carry out, were buried in the snow, one day's journey directly upon our track. It is a singular fact, which the Indians related to me, that bears and wolves have so great a dislike to the branches of the juniper, that if a few of them are stuck in the snow where the venison is deposited, they preserve it from the depredations of these animals.

The Indian squaws pleased me much by their natural courtesy. Though walking above a hundred miles in Indian rackets, or snow-shoes, has made me now somewhat expert in the use of them, it may be imagined that I was at first, indeed I must be still, very awkward in them, by the side of an Indian. Being thirty-three inches in length, and eighteen inches broad, and weighing each of them twenty ounces, even before they are saturated with wet, they occasioned me many falls and disasters. This was especially the case in descending very steep hills, or going upon the thin ice of Long Pond, which broke in under our weight. The water which had collected to the depth of a foot or a foot and a half on the top of ice of some of the large lakes, had its own coat of ice, and although the safety of the traveller is not endangered by the weakness of this upper ice, his expedition is very much impeded. Though noisy in their mirth at their own disasters, these Indians were courteous in rendering me every assistance in my difficulties. We pitched for the night near the bay of Eastbrook.

A description of the process of making our temporary place of rest for this night may suffice for the description of our similar arrangements during the week. The snow being at least ten feet deep, a rude shovel is first cut out of the side of some standing tree, which is split down with a wedge made for the purpose. The snow is then turned out for the space of eight or ten feet square, according to the number of the company which requires accommodation. When the snow is cleared away, quite to the ground, the wood is laid on the ground for the fire. About a foot of loose snow is left in the cavern round the fire. On this the spruce, or fir, branches, which break off very easily when bent hastily back downwards, are laid all one way, feather-wise, with the lower part of the bough upwards. Thus the bed is made. Some of these boughs are also stuck upright on the snow against the wall of snow by the side of the cavern, and a door or opening is left in the wall of snow for the bringing in, during the night, the birchwood for burning, which is piled up in heaps close by for the night's supply, that any who may be awake during the night may bring it in as it is required. Here the traveller

* *Six Months of a Newfoundland Missionary's Journal*, from *February to August*, 1835.

lies with no covering from the weather, or other shelter than the walls of snow on each side of his icy cavern and surrounding trees may supply. A yellow fungus which grows on the wich-hazel supplies tinder to the Indian, who is never without flint and steel, and he is remarkably expert in vibrating moss, and dry leaves, and birch-bark, rapidly through the air in his hands, which, soon after the application of a spark, ignite and make a cheerful blaze. As the fire melted our cave away, and enlarged our chamber of ice, branches of verdant spruce, fresh as when first covered in October and November, came forth to view several feet below the surface of the snow.

The correct and modest deportment of the squaws who were in our company here and in the wigwams, was highly creditable to them. I had before met with dormitory arrangements in our planters' houses, of so promiscuous a description, that my Irish guide, who had lived four years among Indians, expressed his surprise at a want of delicacy which he had never seen among the Micmas; but I could not have imagined, had I not myself witnessed it, that this people could have shown so much delicacy and propriety of conduct as I observed among them, wherever I met with them. I have the squaws chiefly in view in this remark; but I have never seen any of the men otherwise than well behaved, except when they have been under the influence of liquor. To the immoderate use of this they are too generally strongly addicted. There are gratifying exceptions, however. I had been supplied, by the kindness of Mr. Gallop, with some port wine, some of which I offered to my Indian guide, but I found that his notions of fasting were so correct, that they extended to all indulgences, and during Lent he declined tasting even wine: some of them during that season forego smoking. The Indians dress their venison on skewers of wood, which they stick in the ground around the fire. They plaited for me a basket-like mat, of small spruce-boughs, to serve as a plate. In this they served me the deer's heart, as the most delicate part of the animal.

The intense cold made the trees crack, with a report, in the silence of the night, as though struck with an axe. My watch, also, under the same influence, became of little use, a most serious inconvenience when traversing the country in a season when the days are so short, and a little miscalculation may occasion the traveller's being benighted.

Sunday, 5 —At half-past six, A. M., I took leave of the two Indians and the young squaws, who were now returning, and as I parted from them, I felt that I should miss those musical prattlers; for their soft language, though I could not understand a word of it, had fallen very gratefully upon the ear in the stillness of a night in the forest. I had been induced, too, on the preceding night to creep out a little distance from the fire, that I might enjoy the picturesque effect of our little group, as the stars were twinkling in the broad arch of heaven, and the smoke was curling through the evergreen branches which were enlivened by the ruddy glare of our brisk fire; and, as I heard the light laugh, and caught the good-humoured faces of my companions, I had felt that when they left us, I should retain all the privations and lose all which probably might have given some charm to such a tour.

We saw tracks of deer every twenty yards as we passed through the country; so numerous were they at last, that we ceased to take any notice of them; herds of deer became themselves objects of very frequent occurrence. They offered a very interesting sight. The whole interior, with the exception of the tops of some of the hills, from which the snow had melted, was then white with snow. These bare spots upon the hills are called "naps;" though they are brown, and not green, they resemble island-meadows in an ocean of snow. On these the deer were grazing leisurely like cattle. They were travelling in quest of food, from one of these naps to another. The partridge, or ptarmigan were also very numerous upon these hills, searching for a species of cranberry, which is called here, the partridge-berry. In places near water, which, after long frost, becomes exceedingly scarce in the interior, the tracks of the deer were as thick, as those of cattle in the snow in a farm-yard.

For three days we were favoured with very brilliant weather, and made so much progress upon the hard snow, that I believe we were one-third of our way across to Bay St. George, having got within sight of the Catt Aeau Hills. A field of white paper, varied only by an occasional blot of the pen, with the full sun upon it all day, and the red glare of the fire all night, to say nothing of the effect of the wind by day and of the wood-smoke, which the Indians call the

"cruel steam," by night, may give some idea of the constant trial to which our eyes were subjected.

Monday, 6.—By night we felt our eyes very weak.

Tuesday, 7.—The whole three of us were affected with a gritty, gravelly sensation in the eye, and were, at length, completely deprived of the power of sight. Our provisions, too, over which the Indian who was cook, had, with the usual improvidence of his race, not been sufficiently economical, were just out. In a country which abounds with game, and in which it is so difficult to travel, even without any burden, none think of carrying provisions for more than a day or two into the interior with them: but neither the pilots nor I could now see sufficiently to use a gun, or bear indeed to look upwards. The Indian did try, but he came back without success, although he met with many fresh tracks of deer, and heard many partridges, and in the course of the night, deer had evidently passed within twenty yards of our retreat. It became so thick, moreover, that, had we been ever so little affected with snow-blindness, we could not have seen more than a few yards, and could not consequently have made any way in an unknown country. Our Indian guide, while he was in search of deer, nearly lost all track of us, when, our allowance of food being exceedingly scanty, our situation seemed likely to be very deplorable. All Tuesday we rested in our icy chamber. What an oratory was it for the prayers of two or three, who were surely agreed touching what they should ask of their Father in heaven. The ejaculations, "give us this day our daily bread," and, "lighten our darkness," commanded a ready response. Such place might be a Bethel, and there may be seasons in the lives of those who travel, and scenes such as these, of which they may afterwards say, that the LORD was by them in the wilderness, and that it has been good for them to have been there. Some natural tears may have mingled with the water which the acrid vapour from the smoke of the damp wood (for it now rained) forced from my eyes, as I thought of the probable anxiety of my dear wife, and of the likelihood that all my dreams of future useful labours in the church might be thus fatally dissipated.

It was at length hinted by the Indian, that my dog might make a meal; and it is as much that they may serve in such a season of extremity, as for any foudness which

they have for the animal, or use they generally make of them, that Indians are usually attended by dogs of a mongrel breed. Had my Indian pilot known the coast, we might have got to some Indian wigwams in White Bear Bay, but he did not like to attempt reaching that bay. The straggling locations of these Indians along our coast, reminded me much of the separation between Abraham and Lot. The reasons, in the case of Indians, who separate son from father, and brother from brother, that they may have uninterrupted space for their hunting and furring excursions, are similar to those which led the patriarchs to live apart, that they might have ample space for their pastoral pursuits. A large lake, inside of the Bay East, which I passed, gave me the idea, with its precipitous wooded cliffs, of an inland sea: the size of some of the lakes of Newfoundland is immense; a lake within the Bay of Islands, in which are numerous seals the whole summer, has an island of forty miles extent in the midst of it.

Wednesday, 8.—This morning, on finding the weather still thick, I divided the bread-dust and crumbs, being all that now remained of our provisions, and not amounting altogether to more than two biscuits, into three parts; I gave a part to each of my guides, and reserved one for myself. I now saw the danger which must attend our moving in such thick weather, but, blind as we all were, I knew that we must either make an effort to return, or must starve where we were. I proposed, therefore, to the Indian pilot, that we should try to return to the spot where we had left so much venison buried. At first he hesitated; but, at length he agreed that we should attempt it. A black gauze veil, which I had kept over my eyes when the sun was at its height, and the resolution to which I had adhered of not rubbing my eyes, had preserved me, perhaps, from suffering so much from sun-blindness as my companions. Maurice Louis, the Indian, would open his eyes now and then to look at my compass; —we could not see for fog more than a hundred yards; he would fix on some object as far as the eye could reach, and then shut his eyes again, when I would lead him up to it. On reaching it he would open his eyes again, and we would in the same manner, take a fresh departure. It was literally a case in which the blind was leader to the blind. The fog made our travelling dangerous; it did indeed

occasion our going astray; but it was providentially favourable to us upon the whole: for, had the sky been clear, and the sun bright as when we set out, we must have been incapacitated by our sun-blindedness from moving for a week at least, and must have suffered much, if not fatally, from want of food.

By forced marches,—the snow now being soft, and nearly the entire distance to be travelled in rackets, in consequence of which we could not make the same expedition which we did as we came along,—we were providentially enabled to reach by seven or eight, P.M., the same places at which we had halted at four each day on our outward march. Thus, a degree of labour, that of digging and clearing, to which we were now quite unequal, was spared us on our way back. The small quantity of biscuit to which we were now reduced, led me to advise my companions not to eat any quantity at a time, but to take a piece of the size of a nutmeg when hunger was most craving. We did, indeed, gather each day on our return, about as many partridge-berries as would fill a wine-glass a-piece. These we found very refreshing and nutritive. Having been ripened in the fall of last year, and been sheltered under the snow all the winter, they were, now that the snow melted away from them, like preserved fruit in flavour, and resembled a rich clarety grape. At night, the want of water is a great privation in this winter travelling. At this season, if a lake or rivulet chance to be near your resting-place, it is, in all probability, protected from invasion by so thick a coat of ice, that it would require some hours' labour with a hatchet to get at it. A draught of water, obtained at such a price of labour, to guides already over-wearied with carrying his burden and hewing his wood, a humane man would relish as little as Sir Philip Sydney would have relished a selfish draught at Zutphen, or David from the well of Bethlehem. (2 Sam. xxiii. 15, 17.) I contented myself, therefore, with water supplied by snow, melted by the smoky fire. This water, together with the wind, had the effect of parching and cracking my swollen lips to such a degree, that when, on getting out of the country on the 10th, I again saw my face, after an interval of eight days, in a piece of broken glass, I had some difficulty in recognising my own features.

The most scorching heat in Summer does not tan and swell the face more than does the travelling in the snow at this season. Under the combined influence of the wind and sun, the skin peeled off from my nose and ears, and the exposed parts of the neck, as in summer.

Thursday, 9.—Still dismally thick weather; but we proceeded on our way in the same manner as yesterday. The noise of the woodpeckers upon the bark of the trees truly portended rain, of which we were much afraid; we saw quantities of deer and ptarmigan, but, though the fog favoured our weak sight much, we could neither of us take a sight with the lifted gun. At one place we came upon the recent tracks of wolves; they had consumed or dragged away all remains of a deer, except a little hair from the skin, and some blood, by which the snow was stained.

By night, through God's most merciful protection, we reached the place where the Indians had left so much venison buried since Christmas.

There are on this extensive island about seventy thousand souls, British subjects, scattered at vast distances from each other, many of whom had not so much as seen a Christian minister before they were visited by Archdeacon Wix. His Journal consequently abounds in highly interesting accounts of his reception, and his ministry among them; he makes out a strong case of the want of means to supply the necessary religious instruction; and he concludes by an eloquent appeal to the Christian public, to contribute their aid to the accomplishment of that great work, to which he has so zealously devoted himself.

TRULY it is written, that the ways of God are past finding out, and his decrees unsearchable. Is the Lord thus great? So also is he good. I am an instance of it. I have trampled the world under my feet, laughed at fear, and derided danger. Through millions of fierce savages, over parching deserts, the freezing north, the everlasting ice, and stormy seas, have I passed without harm. How good is my God! What rich subjects have I for praise, love, and adoration!—LEDYARD, *the Traveller.*

EAST INDIA STATIONS. No. VIII.

Barrackpore.

The forces which are considered necessary for the protection of Calcutta are not stationed within the city itself, but at a considerable distance from that noble seat of the Indian government. The infantry cantonments are at Barrackpore, which is distant about sixteen miles, that of the artillery about eight, at Dum Dum, whilst the actual guard at Calcutta is composed of the city militia.

Barrackpore is an irregularly built station, situated on the left bank of the river Hooghly. Many of the houses are as splendid as the mansions of the neighbouring city, but the larger portion consists of bungalows, built and fitted up in a superior style. A few look upon the river, and those which thus command the fresh breezes from the water are delightfully cool, and the views from the balconies are superb; for it is scarcely possible to imagine any thing more grand and imposing, in an architectural point of view, than the splendid settlement of the Danes on the opposite bank of the Hooghly, Serampore, with its proud palaces mirrored on the glassy surface of the stream. The beauties of Barrackpore are of a different kind; its buildings are embosomed in trees, and, with the exception of the palace of the governor-general, which is raised in a commanding situation, only peep out between the branches of luxuriant groves. The country all round is wooded to excess, affording a most agreeable shade, and offering specimens of floral magnificence not to be surpassed in any part of the world. The magnolia attains to a gigantic size, and fills the air with perfume from its silvery vases; other forest-trees bear blossoms of equal beauty;—the richly-wreathed pink acacia, and numerous tribes, adorned with garlands of deep crimson and bright yellow, abound;

and although, with the exception of the park, which has been raised into sweeping undulations by artificial means, the cantonments and their vicinity present a flat surface, the combinations of wood, water, and green-sward, yield scenes of tranquil beauty.

The most remarkable feature of this cantonment is the country-residence of the governor-general, with its magnificent ornamental park. For this Barrackpore is indebted to the Marquess of Wellesley, and it is justly considered one of the finest specimens of dressed and ornamental nature which taste has ever produced. The mansion is elegant and commodious, and the gardens are unrivalled, both in beauty and stateliness, combining the grandeur of Asiatic proportions with the picturesque of European design. A large stud of elephants is kept, and these noble animals, decorated with flowing *jhools* of scarlet cloth, edged with gold, and bearing freights of ladies connected with the vice-regal court, may be seen pacing along the flowery labyrinths,—to European eyes strange guests in a private garden.

Barrackpore, as it may easily be imagined, is a place of great resort for all classes of persons from Calcutta; indeed it is the grand thoroughfare to the Upper Provinces. It may be approached either by the river or by land. The latter approach presents sixteen miles of the finest roads in the world, very broad, kept in excellent repair, and shaded, to the great delight and comfort of the various traversers, by an avenue of trees. The traffic is very considerable, the tide interfering with the water-carriage, conveyances of every description are passing at all hours of the day. Notwithstanding, however, the shelter afforded by the leafy canopy above, Europeans seldom venture to brave the noontide heat, their journeys being chiefly performed in the morning or evening.

PAGODA AND GHAUT, AT BARRACKPORE.

The journey to Barrackpore must be enchanting to those who delight in forest-scenery; the hand of man is apparent in the smooth, finely-levelled road, which offers itself to the traveller; but a dense jungle appears to close it in on either side. Native huts, of the wildest and simplest construction, meet the eye in the most picturesque situations; many with scarcely any roof, excepting that afforded by the overhanging branches of trees, which never lose their leafy mantles, and yet not destitute of an air of comfort; the floors being scrupulously clean, and the jars and other domestic utensils neatly arranged and kept in order. Monkeys may be seen disporting amidst blossoming boughs, the jackal glides through the covert, and the woods echo with the sullen notes of lonely birds. The denseness of the population, and the vast numbers of natives, who pass along rejoicing in the shade which tends so much to lighten their toils, prevent all idea of solitude, though the prospects are so truly and exclusively sylvan.

Soon after Bishop Heber arrived in India, he visited the governor-general at his country residence.

We went (he observes) to Barrackpore on the 28th of October. The house itself is handsome, containing three fine sitting-rooms, though but few bed-chambers. Indeed, as in this climate no sleeping-rooms are even tolerable, unless they admit the southern breeze, there can be but few in any house. Accordingly, that at Barrackpore barely accommodates Lord Amherst's own family; and his Aides-de-camp and visiters sleep in bungalows, built at some little distance from it, in the park. Bungalow, a corruption of Bengalee, is the general name, in this country, for any structure in the cottage style, and only of one floor. Some of these are spacious and comfortable dwellings, generally with high thatched roofs surrounded with a verandah, and containing three or four good apartments, with bath-rooms, and dressing-rooms enclosed from the eastern, western, or northern verandahs.

At Barrackpore, for the first time, I mounted an elephant, the motion of which I thought far from disagreeable, though very different from that of a horse. As the animal moves both feet on the same side at once, the sensation is like that of being carried on men's shoulders. A full-grown elephant carries two persons in the howdah, besides the driver, who sits on his neck, and a servant on the crupper behind with an umbrella. The howdah is not unlike the body of a small gig, but without a head. At Calcutta, or within five miles of it, no elephants are allowed, on account of the frequent accidents which they occasion by frightening horses. Those at Barrackpore were larger animals than I had expected to see, two of them were at least ten feet high. That on which Lord Amherst rode, and on which I accompanied him, was a very noble fellow, dressed up in splendid trappings, which were a present from the King of Oude, and ornamented all over with fish embroidered in gold, a device which is here considered a badge of royalty. I was amused by one peculiarity, which I had never before heard of; while the elephant is going on, a man walks by his side, telling him where to tread, bidding him "take care," "step out," warning him that the road is rough, slippery, &c., all which the animal is supposed to understand, and to take his measures accordingly. The mahout says nothing, but guides him by pressing his legs to his neck, on the side to which he wishes him to turn, urging him forward with the point of a formidable goad, and stopping him by a blow on the forehead with the but-end of the same instrument.

The cantonment of Barrackpore is very pretty, consisting of a large village inhabited by soldiers, with bungalows for the European officers and other white inhabitants, who are attracted hither by the salubrity of the air, the vicinity of the governor's residence, or the beauty and convenience of the river. In the park several uncommon animals are kept: amongst them the Ghyal, an animal of the ox or buffalo kind, with immensely large horns, and a native of Thibet and Nepaul. It is very much larger than the largest Indian cattle, but hardly, I think, equal to an English bull: its tail is bushy, and its horns form almost a mass of white and solid bone to the centre of its forehead. There is also another beautiful animal of the ass kind, from the Cape of Good Hope, which is kept in a

stall, and led about by two men to exercise daily. They complain of its wild and untameable spirit, and when I saw it, they had hampered its mouth with such an apparatus of bit and bridle, that the poor thing was almost choked. It is extremely strong and bony, of beautiful form, has a fine eye and good countenance, and though not striped like the zebra, is beautifully clouded with different tints of ash and mouse colour.

We met two lynxes during our ride, also taking the air, led each by his keeper, one of them in body-clothes, like an English greyhound, both perfectly tame, and extremely beautiful creatures, about the size of a large spaniel, and in form and colour something between a fox and a cat, but with the silky fur and characteristic actions of the latter. The other animals, consisting of two or three tigers and leopards, two different kinds of bears,—one Bengalee, the other from Sincapore, a porcupine, a kangaroo, monkeys, moose-deer, birds, &c., are kept in a menagerie, their dens all very clean, and, except one of the bears and one hyæna, all very tame.

Alligators come on shore to bask, and there is one small one in a pond in the park. They are of two kinds, one, which seems like the common crocodile of the Nile, has a long nose, and is harmless, unless provoked. The other is somewhat smaller, has a round snubbed head, and frequently attacks dogs and other similar animals, and is sometimes dangerous to men who go into the river. The Indian squirrel, which abounds in the park, is smaller than ours, more of an ash-colour, with two black and white streaks down its back; and lives not only in trees, but in the thatch of houses.

The garrison of Barrackpore consists of several regiments of *sepoys*, under the command of a major-general; the staff is exceedingly numerous, embracing appointments peculiar to the station. There are, besides, a considerable number of private residents, the families of retired officers, and widows, who, possessing large connexions in India, prefer it as a residence to the parent state; many of these persons possess considerable wealth, and live in a style of

appropriate splendour. Cadets, formerly, on their arrival at Calcutta, were permitted to travel alone, or in company with other lads, as ignorant and inexperienced as themselves, to the places of their destination; but now, such as are posted to regiments stationed at different places, are appointed to do duty at Barrackpore, until they can be sent up the river, under the care of an experienced officer. Here they are taught their first military lessons, and perform their duties under the eye of a major-general.

Bishop Heber again visited Barrackpore, which he reached from Calcutta by water.

On the 27th of December, (he says,) I paid a visit to the governor at Barrackpore. I went by water early enough in the morning to preach to the congregation, which, *for want of a church*, assembles in the great hall of the government-house. The distance by water is about twenty-four miles, which, with a favourable tide and a good set of rowers, may be ascended in two hours and a half. The river continues of nearly the same width as at Calcutta; its banks are covered with fruit-trees and villages, with many very handsome pagodas.

It is with regret we observe the circumstance here alluded to by the bishop, that in so important a station as Barrackpore the members of the Established Church had then no place devoted to the celebration of divine worship according to their own faith. Let us hope that such is not still the case.

THE RESULTS OF TRAVELLING.

If life be short, not so to many of us are its days and its hours. When the blood slumbers in the veins, how often do we wish that the earth would turn faster on its axis, that the sun would rise and set before it does; and to escape from the night of time, how many follies, how many crimes are committed!

Now in travelling we multiply events, and innocently. We set out, as it were, on our adventures, and many are those that occur to us, morning, noon, and night. The day we come to a place which we have long heard and read of,—and in Italy we do so continually,—it is an era in our lives; and from that moment the very name calls up a picture. How delightfully too does the knowledge flow in upon us, and how fast? Would he who sat in a corner of his library, poring over books and maps, learn more, or so much, in the time, as he who, with his eyes and his heart open, is receiving impressions all day long from the things themselves? How accurately do they arrange themselves in our memory;—towns, rivers, mountains! and in what living colours do we recall the dresses, manners, and customs of the people? Our sight—one of the noblest of our senses—"fills the mind with most ideas, converses with its objects at the greatest distance, and continues longest in action without being tired." Our sight is on the alert when we travel, and its exercise is then so delightful. that we forget the profit in the pleasure. Like a river that gathers, that refines as it runs, like a spring that takes its course through some rich vein of mineral, we improve, and imperceptibly,—not in the head only, but also in the heart. Our prejudices leave us, one by one. Seas and mountains are no longer our boundaries. We learn to love, and esteem, and admire beyond them. Our benevolence extends itself with our knowledge. And must we not return better citizens than we went? For the more we become acquainted with the institutions of other countries, the more highly must we value our own.——ROGERS.

A WISE man knows his own ignorance; a fool thinks he knows everything.

The heavenly bodies were not made for man, and to them his utmost power cannot reach. The world which he inhabits forms but the fraction of an unit in the vast scale upon which they are moulded. It disappears even in the range of distance at which they are placed; and when seen from some of the nearest planets, it is but a dull speck in the firmament. Under this conviction, the astronomer must feel his own comparative insignificance; and amidst the sublimity and grandeur of this material universe, the proudest spirit must be abased, and fitted for the reception of those noble truths which can be impressed only on an humble and a softened heart. He, indeed, who has rightly interpreted the hand-writing of God in the heavens, must be well prepared to appreciate it in the record of His revealed will.—*Quarterly Review*

SOME ACCOUNT OF BRIDGES.

Having already given an account of Suspension Bridges*, we now proceed with a history of *Bridges* of the usual construction; comprising under that term every kind of structure intended to carry a road or canal across a river, valley, or other obstruction to its continuity.

The antiquity of Bridges must be nearly coeval with that of the human race. After providing food, dwelling-places, and clothes, one of the first wants of which society would be sensible would be that of some means of crossing the streams and brooks by which it was surrounded; and *natural* bridges, consisting of trunks of trees which had fallen across a rivulet, or masses of rock wedged in a mountain-fissure, would present models for imitation where such did not already exist.

The earliest mention of a bridge in history is of that stated by Herodotus (Book i.) to have been built by a queen Nitocris across the Euphrates at Babylon, to connect the two portions of the city lying on either shore. According to that historian, this work consisted of squared beams laid along the tops of a series of stone piers, which were built in the bed of the river, the waters having been diverted for a time from their natural channel, to admit of this being done. Some of the beams composing the road-way were removed every evening, to prevent the inhabitants of the two banks from robbing one another. We believe that

modern travellers have not succeeded in tracing any vestiges of this bridge among the interesting remains of that city, and its site is therefore uncertain.

Such must have been the form of all bridges previous to the application of the *arch*. The precise period of its discovery has been much disputed. Two masses of stone, or two trees, mutually supporting each other over a chasm, by being *wedged* together, present the general principle of the arch, which must have been known from the earliest times. Nor does it appear to require great ingenuity to place three, or even four stones in a similar position to support one another, by being hewed into such a form that none could fall between those adjacent to it, without first displacing them, which their weight and mutual friction prevented them from doing. Arches of this simple form are now known to exist in the pyramids of Egypt; and it is supposed by some that such arches were used by the Babylonian builders.

But an arch, in the proper sense of the word, implies many separate stones, arranged to support one another in a *curve*, for the purpose of economizing material; and at what period, and by what people, such an arch was first used, is uncertain. The Etrurians were acquainted with it, and the great sewers of ancient Rome called the Cloacæ Maximæ, generally referred to the supposed period of the Tarquins (about 600 years B.C.), are the oldest works existing, in which the arch is found.

As the arch never appears in any existing remains of Grecian architecture, we may infer that nation to have either been unacquainted with it, or to have neglected it from some principle of taste or habit. As there must have been frequent intercourse between the Dorian colonies of Italy and their mother-country, we can hardly suppose this important invention could have been long concealed from so intellectual a people, and yet the second supposition is equally difficult of explanation. It is certain that, during the most flourishing times of the Athenian republic, there was no means of crossing the river Cephisus, except by boats, till the emperor Hadrian built a bridge over it.

The Romans, having been taught the construction of the arch by their brethren of Etruria, availed themselves of it on all occasions and were enabled to construct bridges in

every part of their enormous empire, which remain to the present day to attest their power and their skill.

ROMAN BRIDGES.

THERE were eight bridges in ancient Rome, the oldest of which, called *Pons Sublicius*, is stated to have been erected by Ancus Martius, and was that alleged to have been defended against the troops of Porsenna by Horatius Cocles. This bridge was originally of timber; it was rebuilt with stone by Æmilius Lepidus, and thence received the name of *Pons Æmilianus;* it was again restored in marble by the Emperor Antoninus Pius, and it was from this bridge that the body of the infamous Heliogabalus was cast into the Tiber. Portions of its ruins are still extant near the Aventine Hill.

The *Pons Triumphalis* was that over which persons passed in their way to the Capitol, to whom an ovation had been decreed by the senate; its ruins are still visible near the palace of the Vatican.

The present *Ponte Sisto* was rebuilt by Pope Sixtus the Fourth, on the site of the *Janiculine bridge*, restored in marble by Antoninus Pius, from one still more ancient, situated in the oldest part of the city.

The *Pons Ælius* was originally built by the Emperor Hadrian, opposite the Mausoleum he intended for the place of his sepulture. It was restored by Pope Clement the Ninth, and is now called *Ponte Sant' Angelo*, the Mausoleum being the present Castel di Sant' Angelo.

The bridge now called, from the church near it, *Ponte Santa Maria*, but more commonly *Ponte rotto*, from two of its arches being fallen in, is all that remains of the old Roman *Pons Senatorius*, over which the senate went in procession to consult the Sibylline books. This bridge is near the Palatine Hill.

The *Pons Milvius* was built by Scaurus in the time of Sylla, at a short distance from the city, on the modern road to Florence. There are two historical events of interest connected with this bridge; on it Cicero caused the ambassadors of the Allobroges to be arrested, and obtained confirmation of Catiline's conspiracy by the letters found in their possession; and it was near the Milvian bridge that

Constantine the Great defeated his rival Maxentius, on which occasion the former asserted he had that miraculous vision of the Cross which effected his conversion. This bridge was restored by Nicholas the Fifth, and is now called *Ponte molle.*

There are many other bridges in the neighbourhood of Rome, chiefly erected during the decline of the empire.

The celebrated bridge erected by order of the Emperor Trajan over the Danube, is only known from the descriptions of Dion Cassius and others, whose accounts of it are very various, though they all agree as to its magnitude. The historian just mentioned states, that it had *twenty* piers, and that its largest arches were 170 feet in span *, and raised 150 feet above the river. The architect was Apollodorus, the same who designed the forum and column at Rome, commemorating the victories of Trajan over the Dacians. The foundations of the piers of this bridge are still visible under the shallow waters of the Danube, about three miles from Gladova, near the frontier division of Wallachia and Bulgaria; but according to the account of modern travellers, there are not more than six or seven piers visible in the bed of the stream.

The Roman empire and its successors were also indebted to Trajan for the fine bridge over the Tagus in the province of Estramadura; the Arabians gave the name of *Alcantarat-al-seif*, or *Bridge of the Sword*, to the structure, and hence the town where it is situated derives its present name.

* There are several terms employed in describing arches and bridges, with which the reader should be acquainted.

The *span* or *chord* of an arch, is the *horizontal* distance between the piers or abutments which support it, *measured at the points where the arch begins or springs.* A straight line being supposed drawn at those points.

The *versed sine* is the height from this line or chord, to the highest point of the underside, or *soffite*, of the arch. This term, though properly applied to the circle only, will be used in this paper even when speaking of elliptic and other curves.

The *arch-stones*, or *voussoirs*, are the separate pieces of which the arch is composed; they are usually odd in number, the centre one being called the *key-stone*, which is at the highest part of the curve. Of the two curves formed by the lower and upper faces of the voussoirs, the former, or real outline of the arch, is called the *intrado*, the other the *extrado.*

The *spandril* is the space comprised between the upright line of the pier, the road-way, and the curve of the extrado. Each arch, therefore, has two spandrils, which are usually equal and similar.

This bridge was 670 feet long, and consisted of six semi-circular arches, the largest being 101 feet in span, and of such an altitude as to raise the level road-way 200 feet above the river. The town of Alcantara being an important point in military operations, this bridge was nearly destroyed by the British during the campaign of 1809, in order to cut off the communication, and to impede the advance of the French army. In our paper on Suspension Bridges, we mentioned that a temporary rope bridge was subsequently thrown across one of the ruined arches, to allow of the passage of a detachment of our troops†.

The arch of the widest span which occurs in any Roman bridge is in that at Verona, called the Ponte del Castel Vecchio; the centre one of the three is 170 feet.

Our limits will not allow of any description of the numerous other works of this class spread over all southern and western Europe.

ROMAN AQUEDUCTS.

The construction of those stupendous works for the conveyance of water from distant sources, to towns deficient in that necessary, so abundant over every part of the Roman empire, is commonly, though erroneously, attributed to the ignorance of that people in the simplest laws of hydrostatics‡. According to Julius Frontinus, Rome, in his time (about A.D. 70), was supplied with water from nine sources, brought from distances varying from ten to sixty miles, partly along subterranean passages, and partly on stone arcades across the valleys, according to the nature of the ground. One of these aqueducts, the Anio vetus, was carried on arches for a distance of forty-two miles. Every great city in the Roman empire was equally provided with

† There is a view of the bridge with this addition, in the frontispiece to Sir H. Douglas's work on military bridges

‡ When labour was cheap, because it could oe commanded to an unlimited extent, in consequence of the existence of slavery, it was perhaps considered an easier and shorter method of effecting the object, to build a ponderous aqueduct of stone arches, than to form and unite short pipes of metal or earthenware for an equal distance. We know that the Romans could make such pipes, but possibly not of any great length, or of sufficiently good workmanship to resist the pressure of a current of water descending from a considerable elevation.

a constant supply of water by means of similar works, and the remains of the arcades required for these purposes are among the most interesting monuments of antiquity.

The finest existing specimen of an ancient aqueduct is that portion of one called the *Pont du Gard*, three leagues north of Nismes, in the province of Languedoc. From some initials still legible on it, it is supposed to have been built by Agrippa, the friend and general of Augustus, to convey the waters of the spring of the present Eure to Nemausus, or Nismes. The lower tier of arches, of 80 feet in span, are six in number. The second tier consists of eleven, and the upper of thirty-five. The level of the top of these is about fifty yards above that of the river Gardon. Louis the Fourteenth built a bridge alongside of this tier and corresponding with it; and all travellers agree that the imperfections of the modern structure form a striking contrast to the beauty and solidity of the ancient work. The structure is ruined at each extremity, and thus disjoined from the rest of the aqueduct, the remains of which, however, are in tolerable preservation. The injury is supposed to have been committed by the Northern barbarians when they took possession of the country. But one still more formidable to the structure was perpetrated by the Duc de Rohan at the beginning of the last century, who, to facilitate the passage of his artillery during the religious persecutions in Languedoc, cut away the piers of the second range of arches for one third of their thickness, and three yards in height. Nothing but the solidity of the structure could have saved it from subsequent destruction; as it was, it suffered considerable settlements.

Aqueducts, in the proper sense of the word, have been constructed in modern times, and we now carry canals over valleys by means of arcades similar to those of ancient Roman work. When such a structure is employed for a road-way or rail-road it is called a *viaduct*,—an useless term,—for to all intents and purposes it is a bridge.

Our readers will be better able to appreciate the merits of such works, if we briefly explain in what the difficulty of constructing arches consists. If an arch had no superstructure to support, there are certain curves in which the wedge-shaped voussoirs might be arranged so as to ensure perfect stability, or so that no portion of the surfaces of these stones which are in contact, shall be pressed more

than another, and therefore there would be no tendency to give way in one part more than another. A dome, to cover over a building, may be built of small stones or bricks, which would be perfectly secure, of whatever magnitude it might be, provided the materials were sound, and properly put together*. But arches are generally intended to support some superstructure, and on account of the curvature of the arch, there must be a greater depth of materials over the spandrils than over the *crown*, or highest part; and consequently, a greater weight pressing on the haunches of the arch.

This causes the necessity for varying the size of the voussoirs, so that those which form the lower part of the arch may be enabled to resist this additional weight; and the whole must be constructed with reference to the inequality of pressure exerted among the arch-stones, in consequence of this change in the conditions of the problem.

To construct an arch with any other curve than the circle, considerably increases the practical difficulty, both in framing the *centering* of timber to support the arch-stones while they are being put up, and because in this case it is necessary to give each of these a different form of outline, so that when put together, the intrado may be of the proper curve. Hence builders, in all times, rejecting these complicated curves, have almost always adopted the *circle*; and in order to obviate the sources of weakness arising from the theoretical deficiency, they have made the vous-

* An interesting anecdote relating to this subject, is mentioned in the *Encyclopædia Metropolitana*, article, "Bridge." A gentleman wishing to cover over a chamber, intended for chemical processes, with a brick arch, drew an outline of the proper curve (*a catenary*), by suspending a chain of the requisite length against a smooth upright surface, and by marking on this in chalk the exact curve in which the chain hung; the *centering* for the arch being made according to this model, the arch was built, and found to be perfectly secure in every part. Soon after, requiring another vault precisely like the first, he left orders with the workmen to adopt the same precautions in every respect; but during his absence, the men, conceiting that the gentleman was "over particular," and that a circle would "do just as well," made the new centering accordingly, and built the arch on it; the gentleman returned to see the centering struck, and when that was done, down fell the arch,—a valuable comment on the popular prejudice in favour of *practical* over *theoretical* knowledge, as it is termed, "a bricklayer must know how to build an arch better than a gentleman."

soirs large enough to ensure stability; that is, they have made them deep enough in every part of the arch to include the proper curve of equal pressure between the intrado and extrado.

It however now became a point of importance to ascertain the minimum of size of the voussoirs compatible with the stability of a circular arch,—this is the point on which the architect must show his science, so that there may be no useless waste of material. One mode of obtaining increased stability would obviously be to load the vertex, or crown, of the arch, so as to counterbalance the weight of the spandrils on the haunches, which has always a tendency to force up the voussoirs at that part. But this remedy would preclude the possibility of making the road-way of a bridge straight, and would give an inelegant clumsiness to the outline of the structure. The next resource consists in lightening the weight on the haunches, by leaving arched cavities in the spandrils, and this is what is usually done in modern bridges; the same end combined with a more elegant outline of intrado, is obtained by adopting elliptic arches, as was done with the Waterloo and new London bridges.

The first important epoch in the history of bridge building, which occurred after the overthrow of the Roman empire, was the establishment of the religious society called the "Brethren of the Bridge," the object of which was to secure travellers from the dangers arising from the anarchy which reigned over Western Europe after the decline of the second, and previous to the establishment of the third, or *Capetian*, race of French monarchs. The mode adopted for effecting their benevolent purpose by the members of this admirable institution, was to keep up and improve the principal roads, and to build bridges where they crossed rivers. We refer our readers to The Treasury, p. 102, for an account of the bridge at Avignon, built under the auspices of this institution.

The "Brethren of the Bridge" erected a bridge at Lyons of 20 arches, and another also over the Rhone of 19 arches, besides several smaller in the abutments. Both these works are remarkable for not being in a straight line on their plans, but curved so as to present a convex front to the current of the river; they still exist.

It may be easily imagined that those architects and workmen who for so many centuries could design and execute the magnificent Gothic cathedrals which embellish Europe, must have been perfect masters of every resource in the practical part of their arts, and were capable of erecting stone arches of the largest span. The bridge over the Allier, at Brioude, in Auvergne, and called *Vieille Brioude*, was built in 1454, by Grenier and Estone; its principal arch is 183 feet in span, and 70 feet in height, the voussoir at the crown being only 5 feet 3 inches deep†.

There is another at Claix, over the Drac at Grenoble, of 150 feet in span; and a bridge built at Verona, in 1354, has an arch of 160 feet.

The Arabians, who, in every part of the extensive empire they founded in the ~~sixth~~, seventh, and subsequent centuries, led the way in cultivating literature and science, by studying the works of the Greeks and Romans, were not backward in the erection of new bridges in their Spanish dominions, to facilitate mutual intercourse between the different provinces; and rivalled the Roman structures of the same description in the magnitude and solidity of their own. An account of one of the finest, that at Cordova, built by Hescham, son of Abdalrahman, in the beginning of the ninth century of our era, will be found in the REPERTORY, page 92.

One of the most noted bridges in Europe, from its being mentioned in several poetic works of the highest order‡, is the RIALTO at Venice, built by Antonio da Ponte, in 1591, after a design of Michael Angelo as it is said. The arch is only 89 feet in span, the versed sine being 20½; with so large a segment, the roadway is necessarily very steep up each side, and is formed into a flight of marble steps; there are two rows of shops on it, dividing the road into three narrow streets, which communicate with one another by an archway at the centre, running across the width of the bridge,

† It is nearly equalled by one in a bridge over the Danube, built by Wicbeking, in 1806. This arch is 181 feet, and only 22 feet 3 inches versed sine; the voussoirs at the crown being 6 feet deep; and both are surpassed by that over the Dee at Chester, erected within these few years.

‡ By Shakspeare, in the *Merchant of Venice*, by Otway in *Venice Preserved*, and by Lord Byron in *Childe Harold*, besides many others.

which is 66 feet. The whole structure resembles less a bridge than an architectural composition supported by an arch, and we think that, if divested of its associations, it would not excite much admiration in any respect. From the nature of the site, it required an extended foundation, which rests on about 12,000 piles of elm, the expense of the whole amounted to 250,000 ducats.

Venice possesses altogether no less than 340 bridges over its canals.

THE BRIDGES OF GREAT BRITAIN.

As might be supposed, our own country yields to none in the world, as regards the number, magnitude, beauty, and variety of our bridges; and though we cannot boast of possessing any Roman work of this kind, yet we have one more ancient than any in Europe, not erected by that people, and which is unrivalled for its singular construction; we mean that at Croyland, in Lincolnshire. This is supposed to have been built about the year 860; it consists of three semi-pointed arches, meeting together in the centre, the abutments standing on the angles of an equilateral triangle. It is placed at the junction of three roads, which thus terminate at the crown of the bridge. The steep ascents are made into steps, paved with small stones set edgewise; at the foot of one segment there is the ruined statue of some Saxon monarch, by some supposed to be Ethelbert.

The Bridge at Burton-on-Trent was built in the twelfth century by Bernard, abbot of that place. It is the longest bridge in England, being 1545 feet from one extremity to the other, and consisting of 34 arches.

A brief notice of the London Bridges has appeared in the first volume of the *Saturday Magazine;* but the interest of the subject to every inhabitant of the metropolis, will warrant us in entering into a more detailed account, and we shall bestow the greater part of our space on *old London Bridge,* a structure peculiarly endeared to all antiquarians and historians of our city, and the destruction of which they must deplore while they admit its necessity.

The first Bridge over the Thames was one of wood, erected in the year 993, opposite the site of the present St. Botolph's wharf. A statute of King Ethelred the Second

fixing the tolls to be paid by boats bringing fish to "Bylyngsgate," alludes to this bridge; and the fleet of Sweyn, King of Denmark, in an invasion he made on this country, was injured and impeded in its progress up the river by running foul of it.

The origin of this bridge is curious, and deserves to be noticed. There had been a ferry at the spot, the proprietor of which left it* to an only daughter, named Mary, who, being in good circumstances, founded a *house of sisters*, or convent, near the church of St. Mary Overie, in Southwark, the present St. Saviour's, and endowed it with the ferry and its proceeds. This convent was afterwards converted into a college of priests, who built this wooden bridge, and maintained it in repair, till finding that the expense would be ultimately saved by a greater immediate outlay, agreed with the citizens of London, who were chiefly benefited by it, to substitute one of stone.

The wooden bridge had been exposed to many vicissitudes; it was nearly destroyed soon after its erection by the Norwegian Prince, Olaf, who attacked the city in behalf of his ally, King Ethelred, whom the citizens had refused to acknowledge. In 1016, Canute, being prevented by the bridge from sailing up the river, dug a channel at the southern end and carried his fleet through it to the western side of the bridge. In November, 1091, the greater part of the bridge was carried away by a violent flood; it was then repaired by a tax levied on the city by William the Second. In 1136 it was again damaged by a fire, and though again restored, in 1163 it was found to be in so dilapidated a condition as to require to be nearly entirely rebuilt, which it was under the direction of PETER OF COLECHURCH†, a priest and chaplain. When the college resolved to erect a stone bridge, attention was turned to Peter, as the person best qualified for conducting the work, and, as it proved, he amply justified the choice; for so sound was the edifice he

* There is an antique monumental figure in St. Saviour's Church, Southwark, which is traditionally said to be that of this ferryman.—See J. T. SMITH's *Antiquities of London*.

† St. Mary Colechurch was a small church built by a citizen named Cole; it was situated at the corner of the present Grocer's-alley, in the Poultry. After the destruction of it by the Great Fire in 1666, the parish was annexed to that of St. Mildred. Misled by the name, some antiquaries have supposed that Peter was of Colchester, but it appears most probable that he was a native of London

raised, that it endured for 600 years, trials which would have destroyed most others.

The *new* bridge was begun about 1176, a little to the west of the old wooden one. So strongly was the necessity for such a work felt, that contributions to it flowed from all parts; the king gave the proceeds of a tax on wool‡, the pope's legate, the Cardinal di Petraleone, gave 1000 marks towards the expense, and the Archbishop of Canterbury, and multitudes of other persons, contributed according to their means.

The piers were built on a framework of elm piles, driven in as close as they could stand, with oak-sleepers laid on the tops, and the intervals filled in with rubble. The coffre-dams, which were made round each, were never removed, and constituted the sterlings, which formed so singular a feature in this venerable structure. The lower courses of the masonry, exposed to the action of the water, were laid in pitch instead of mortar, for at that time no cement of lime was known, which was capable of *setting* under, and resisting the action of water.

In 1205 Peter died§, and three merchants of London were appointed to complete the work, which they did in four years more. The bridge when finished contained 20 arches, of the pointed Gothic form, of unequal magnitude; the total length was 915 feet, and its width 73 feet.

The master-mason of the work, whose name has not been recorded, erected a chapel, at his own cost, on the east

‡ Hence arose the popular belief and saying, that the foundations of Old London Bridge were laid on wool-packs.

§ The similarity in the history of this work and its architect, to that of the Avignon Bridge, built at the same time by Benezet, will strike our readers; each obviously was a man of superior talents, in every way capable of attracting the confidence and esteem of their fellow-citizens, and honoured accordingly at their deaths; only that our countryman was not canonized, and miracles were not attributed to his remains, because the English ever have been a sober people. We could have wished that they had shown a little more *feeling* lately on the subject. When the Old London Bridge was pulled down, the stone-coffin of Peter was broken open by the workmen, and not containing any treasures, was thrown into the Thames; this was not unnatural in persons of that class, but we think more care should have been taken by the principals to obviate such an occurrence, or at least to recover the relic, and deposit it in some fane, as Westminster Abbey, along with the remains of other men of genius and benefactors to their race.

side of the ninth pier from the northern end of the bridge. This chapel, which was dedicated to St. Thomas, was remarkable in many respects; it was a Gothic structure of great elegance of design; the lower story was a crypt, and stood on the sterling of the pier, which was carried out for the purpose 50 feet further than any of the others; the upper part, or chapel, was level with the roadway of the bridge, and stood partly on the pier, presenting a front to the road 40 feet high and 30 wide; the length of the whole building was 60 feet. The body of Peter of Colechurch was deposited in a stone tomb in the crypt of this chapel, within the pier of the bridge; a proper burial-place for the architect. This chapel was, at successive times, augmented by several chantries, so that in the time of Henry the Sixth there were four chaplains belonging to it, whose stipends were bequeathed by different persons at their death. It afterwards became the property of St. Katherine's Hospital, and though it was suppressed as a monastic institution at the Reformation, yet divine service was performed in it till the beginning of the last century; it was then occupied as a shop, and the crypt converted into a paper-warehouse; and such was the solidity of the work, that, though the floor of this story was nearly 10 feet below high-water mark, yet no damp penenetrated the walls. In the enclosure of the sterling, in front of the end of the edifice, a fish-preserve had been made, into which the tide carried the fish, and they were secured by a wire grating; a winding staircase led down to this pond from the chapel. A person who had all his life been connected with the Bridge-House Estate, was living within the last few years, who well remembered descending by this access to fish in the preserve.

This interesting chapel was pulled down in 1760, on the occasion of the repairs and improvements being made to the bridge, and the workmen had some difficulty in detaching the stone-work and iron cramps with which it had been put together: an antique marble font, and some ancient coins were found. The tomb in the crypt was enclosed in the portion situated within the pier by the new facing erected at that time.

The arches of the bridge were of different widths, as most of our readers will still remember; four of the widest, which admitted the passage of larger boats, were called

locks, and there was a moveable *draw-bridge* instead of a stone arch, between the sixth and seventh piers, to admit of still larger vessels coming up the river; this draw-bridge is frequently alluded to in the histories of those times.

There was a tower erected at each end of the bridge at the time of its completion, a practice general with such structures in those periods, when, of course, a bridge would be the first point of attack by a foe approaching the city to which it furnished access. In 1426 a third was built at the north side of the draw-bridge just alluded to; but that various other dwellings were erected on the bridge immediately after its completion, is proved by the mention of the destruction of 3000 persons three years afterwards, who were on the bridge when a fire, which had begun at the Southwark end, communicated to some buildings at the other extremity; these unfortunate people, neglecting to retreat in time, and thus enclosed, were either drowned in endeavouring to escape by the river, crushed in the struggle, and by falling ruins, or miserably burnt in the flames.

These houses were soon generally spread over the whole bridge, and a curious view of the structure, executed by one Norden, in the time of queen Elizabeth, but not published till that of her successor, has the following passage in an eulogy appended to it.

"This famous bridge is adorned with sumptuous buildings and statelie and beautifull houses on either syde, inhabited by wealthy citizens, and furnished with all manner of trades, comparable in itself to a little city, whose buildyngs are so arteficially contryved, and so firmly combined, as it seemeth more than an ordinary street, for it is as one continuous vaute, or rooff, except certain voyd places reserved from buildings for the retyre of passengers from the danger of cars, carts, and droves of cattle, usually passing that way. The vaults, cellars, and places in the bowels, as it were, of the same bridge are many and admirable, which arte cannot discover to the outwarde view." (that is, could not be shown in the picture.)

These "voyd places" seem to have been especially necessary, for when it is mentioned that the street left between the houses on each side was only twenty feet wide in its widest part, and had no footway, it may be supposed the transit of the bridge, to pedestrians, was not a little hazardous; indeed it is stated by some chronicler, that their

only security was to follow in the wake of a cart or a horseman. It was only through these cross vacancies between the houses, that the river could be seen from the bridge, there were parapet walls or palings left at each end of these places for this purpose. The first on the bridge, from the city end, was dignified with the name of London Square.

A fire, in 1646, having destroyed a large mass of these buildings at the north end, the space was filled up again with "New houses, three stories high, besides the cellars which were within and between the piers: and over the houses were statelie platforms leaded, with rails and balusters, and some had pretty little gardens with arbors."

Nonsuch house, a curious building of the Elizabethan age, entirely of timber prepared in Holland, and put up on the bridge, stood near the draw-bridge over the seventh arch, and overhung the river on each side; it was four stories in height, richly carved and gilt. The whole framework was put together with wooden pegs only, no iron being used in the construction.

This labyrinth of dwellings was almost entirely destroyed by the fire of 1666, and the ruins, with what remained, having been cleared away, and the bridge itself repaired at an expense of fifteen hundred pounds, the whole street was re-erected within twenty years on a more regular plan*, yet, though improved, the passage was still inevitably narrow, dark, and dangerous. Harrison, in his history of London, describes the appearance of the bridge, about 1750, in the following terms:—"Across the middle of the street were several lofty arches extending from one side to the other, the bottom part of each terminating at the first story, and the upper part reaching to near the tops of the buildings; these arches were designed to support the houses on each side of the street, and were therefore formed of strong timbers bolted into the houses, which being

* The site was let on building-leases, for 61 years, at a rent of ten shillings per foot frontage, a proof of the high estimation the situation was held in by tradesmen, on account of the publicity of such a thoroughfare.

covered with lath and plaster, appeared as if built of stone. On the outer part of the bridge, on the east side, the view from the water and the quays was sufficiently disagreeable; nineteen disproportioned arches and sterlings, increased to an amazing size by frequent repairs, supported the structure above; these arches were of very different sizes, several that were low and narrow were placed between others that were broad and lofty. The back part of the houses next the Thames had neither uniformity nor beauty, the line being broken by a great number of closets that projected from the buildings, and hung over the sterlings. This deformity was greatly increased by the houses extending a considerable distance over the sides of the bridge, some projecting further over it than the others, by which means, the tops of almost all the arches, except of those that were nearest, were concealed from the view of the passengers on the quays, and made it appear like a multitude of rude piers, with only an arch or two at the end, and the rest consisting of beams extending from the tops of the flat piers, without any other arches, quite across the river."

As early as the time of queen Elizabeth, mills for grinding corn had been erected under the arches at the Southwark end. In 1582, Peter Morice, a Dutchman, erected the water-works at the north end of the bridge; having obtained a lease of the use of the water, and one arch, with the sterlings, on which to erect his machine, for five hundred years, at the rent of ten shillings; the great benefit of these works having been felt, the citizens, in succession, granted him and his successors similar leases of three more arches. Morice made a large fortune, and the property, which continued in his family till 1701, was then sold to one Soames, a goldsmith of the city, for 36,000*l.*

At last, in the year 1755, the incovenience of the houses and the narrow street they left, being more felt from the increasing population of London, they were all cleared away, the bridge restored, parapets and balustrades erected on each side, and two of the middle arches thrown into one, to enlarge the water-way, and an archway opened through the tower of St. Magnus' Church, for the accommodation of the foot-

passengers. In this state this venerable structure remained till its final demolition, in the year 1833†.

To allow of these extensive changes and repairs, it was necessary to construct a temporary wooden bridge on the sterlings, for the accommodation of passengers. This structure was burnt down on the night of April the 10th, 1758; and from evidence given at an inquiry into the event, there was great reason to believe it to have been the work of incendiaries, but though a reward of 200*l.* was offered for their apprehension, no discovery of them ever took place. A new bridge, of a similar construction, was immediately commenced, and completed within a month.

A new bridge, to form a communication between the city of London and the opposite shore, being imperatively required by the rapid increase of the former, an act of parliament was obtained, in 1736, for the erection of one at WESTMINSTER: and M. Labelye, a Swiss Architect, was selected to execute the work. The first stone was laid by the Earl of Pembroke, in January, 1738—9, and the bridge was opened on November 17th, 1750.

The erection of this bridge formed an epoch in the arts, from *caissons* being, for the first time, employed in building the piers. It had always been the custom, in the construction of modern bridges, to form a *coffre-dam*, or enclosure of strong piles driven into the bed of the river, large enough to allow of the pier being built within it; this work was

† It would have been naturally expected that the river on each side of the bridge would be the receptacle of numberless articles thrown from the houses which, for so many centuries, had existed on it. Accordingly, during the excavations for the piers of the new bridge, the following curious and valuable relics were obtained,—

Roman Coins in brass and silver, of most of the emperors, from Augustus down to Constantine: a statue of a horse, of beautiful workmanship, a bronze statue of Harpocrates, and antique lamps. *Saxon, Danish, Norman Coins* from Ethelred and Canute down to the time of William and Mary, a large quantity of them in gold; also gold seals, crucifixes, brooches, rings, daggers, swords, watches, spoons, and plate, keys, and a leaden seal, with P.P. Urbanus VI. and a reverse of the heads of Peter and Paul, which had been appended to a bull, and many other articles besides, in pottery.

made water-tight, by clay, &c. rammed between two rows of piles, and the water being then pumped out, the foundation could be dug and prepared, and the masonry built without impediment from the river.

The method pursued in the erection of Westminster-bridge, was briefly as follows. The mud having been removed by dredging, till the firm sand was reached, the surface of this was laid level by raking, and tried by repeated measurements with a proper instrument. The *caisson* consisted of an enormous *chest*, formed of timber-beams, the bottom being made capable of separation from the sides, and the whole rendered water-tight while it was in use. This chest being floated to the proper spot over the prepared foundation, it was secured to fender-piles driven round the place; and the lowermost course of masonry being laid in it and cramped, the water was admitted into the caisson, by a sluice-gate, and sunk it. It was then ascertained whether it lay truly level on the bed of sand; the sides of the caisson were made sufficiently deep to allow of its edge being above the level of the water when it was sunk, so that by shutting the sluice, and pumping the water out, it would float again with the masonry in it.

If any defect in the level had been discovered, the bed was corrected accordingly, and new courses of masonry being built on that already laid, the whole was again sunk into the precise spot. By these means the pier was raised nearly to the level of low-water, so that by availing themselves of the ebb, and pumping out the water, the workmen could soon add additional courses of masonry, and raise the work above the level of the high tide. When this was done, the sides of the caisson were detached from the bottom, and floated ashore, to be fixed to a new one, to serve for another pier.

The bridge is 1223 feet long, and 44 wide, between the parapets; there are thirteen semicircular arches, besides a smaller one of 20 feet, at each end, next the abutments; the centre arch is 76 feet span, the others decrease in width regularly, both ways, by four feet each. The piers and arches are of Portland stone, the spandrils or haunches being filled up with courses of Purbeck-stone, laid so as to form an arch, so adjusted that the whole mass shall be in equilibrium; each arch is consequently independent of the adjoining ones for support.

The piers between the arches form semi-octagonal projections, which terminate at the parapets in recesses, in which are benches for the convenience of passengers. Six of these, on each side of the bridge, are arched over with stone, forming sheltered alcoves.

The bridge was not quite completed, when one of the piers sunk considerably, in consequence of a quantity of sand for the roadway having been dredged for too near the foundation, and some feet below it. It was necessary to take down the two adjoining arches, and the pier being loaded with cannon till all subsidence ceased, it was raised up to a level with the others, and the arches rebuilt.

The total expense of Westminster Bridge amounted to about 390,000*l*. Its merits, though of a substantial kind that must always excite admiration, were soon eclipsed in outward show by a rival structure, that of BLACKFRIARS.

This bridge was begun in October, 1760, and opened in 1771. The architect was Mr. Robert Milne, a Scot, who while he profited by the able example in scientific construction set him by Labelye, surpassed it far in boldness and elegance of design. Unfortunately this new structure was built of such perishable stone, that it already is greatly decayed, and requires frequent repairs.

The total length of the bridge is 995 feet, the width between the parapets 42; it consists of nine semi-elliptical arches, the central one being 100 feet in span, and the smallest 70. The piers have rounded ends to some height above high-water, above this there are two Ionic columns standing out isolated from the face of the structure with corresponding pilasters behind, supporting an entablature and projection on the parapet above, which forms a recess with benches. These columns constitute the most objectionable part of the design, in an architectural point of view; for the line of the parapet being a curve, the columns are necessarily of different heights and diameters.

WATERLOO BRIDGE is generally admitted to be the finest in England, if not in the world; though its arches are far surpassed in span by some built subsequently to it, yet no other bridge unites such simplicity and grandeur of design with such magnitude. It was designed and executed by the late Mr. Rennie, commenced in 1811, and opened on the 18th of June, 1817. It consists of nine equal, semi-

elliptic arcnes, of 120 feet span, and 32 feet versed sine. The piers are ornamented with two Grecian-Doric columns supporting a plain entablature; and the line of the parapet being perfectly level, these columns are all equal *.

Numerous and beautiful as are the stone bridges, over every part of this kingdom, our space will only allow of our noticing one more. The remarkable bridge at Pontypryd, over the Taaf, near Llantrissent, in Glamorganshire, was built, in 1746, by William Edwards, a self-educated country mason. He had engaged to erect a bridge, and accomplished his task in a superior manner, but there were two piers to the structure, and a great flood carried it away two years afterwards. As Edwards had contracted to *uphold* the work for a certain term, he was obliged to rebuild it, and, to avoid a recurrence of the same accident, he determined to make it of one arch of 140 feet span. He had no sooner completed this bold undertaking, than the weight of the haunches forced up the crown, and his beautiful arch fell to the ground. Undaunted by these misfortunes, this enterprising man recommenced his work a third time, and consulting with Smeaton, he resolved to rebuild the arch of the same span and height as before, but to equalize the weight, he built the spandrils with three open circular arches through them, of nine, six, and three feet diameter each: this plan succeeded, and his bridge stands to this day, elegant as a work of art, but doubly interesting as a memorial of patience, industry, and talent.

BRIDGES OF FRANCE.

Next to our own metropolis, Paris is the city most interesting to us, from the constant intercourse, whether pacific or hostile, we have ever had with the French nation. The narrowness of the Seine at Paris, precludes the necessity for such magnificent bridges as those which adorn London; but in taste of design, and skill in execution, the French architects are quite equal to our own.

On account of the two islands in the heart of the city, Paris requires no fewer than sixteen bridges to facilitate the communication between the opposite banks. We shall

in this place notice only those of stone, and our limits oblige us to be brief in our descriptions.

The *Pont au Change* unites the Isle du Palais with the northern portion of the city, and a bridge has existed at this spot from the remotest antiquity. The present name is derived from the quarter having formerly been the abode of the money-brokers, but it was anciently called *Grand-pont.* The old bridge was destroyed along with two others, by a sudden flood, in 1408, a fate which it again experienced in 1616, after being restored.

This bridge, like our own old London, and so many others in similar situations, was encumbered with dwellings on it, and on the occasion just alluded to, some of the furniture and moveables were carried by the river as far as St. Denis. The structure was rebuilt of wood, and in 1621 it was again destroyed by fire;—the present stone bridge was in consequence erected in 1639-47. But the houses, which were also restored, were finally removed in 1788, by order of the monarch. The centre arch of this bridge is the greatest span of any in Paris, being 100 feet, a fact which serves as a scale of comparison between those of that city and of London.

The *Pont Neuf* is situated at the western extremity of the Isle du Palais, and is divided into two portions, which unite the intervening island with the two banks. The Pont Neuf was commenced during the reign of Henry the Third, in 1578, from designs by *Androuet du Cerceau;* but in consequence of the civil commotions which distracted France for so long a period, it was not completed till 1604, by *Charles Marchand,* in the reign of Henry the Fourth. It is on the esplanade in the middle of the bridge formed by the extremity of the island, that the celebrated equestrian statue of that monarch is situated, which forms so conspicuous an object in one of the finest city views in the world. The southern portion of the Pont Neuf consists of five, the other of seven semicircular arches of such simplicity and strength as to give the edifice the character of an old Roman work. Its total length is 767 feet.

The *Pont Royal* was erected by Louis the Fourteenth, in place of an older wooden bridge destroyed by a flood in 1684.

It is a handsome bridge of five arches, the centre one of 82 feet span. It is situated opposite the Palace of the Tuileries; the architect was Julius Hardouin Mansard, who first contrived the attic in the roof, which bears his name.

The name of the *Pont Louis Seize*, indicates its founder, and derives some interest from its having been completed with stone from the Bastille. It is situated in the finest part of the city, opposite the *Chambre des Députés*, and the *Place Louis Quinze*. This bridge is the work of the celebrated Perronnet, who may be regarded as the French Rennie. It consists of five flat semi-elliptic arches, a favourite form with that architect, and characterizing many of his bridges. The Pont Louis Seize is adorned with colossal statues of celebrated historical persons, and altogether is a striking object.

The last Parisian *stone* bridge we can notice, is the *Pont de l'Ecole Militaire*,—perhaps, in an architectural view, the finest of them all. Like the last, its five arches are flat ellipses of 82 feet span each, and the road-way is level. It is from the design of Lamande, and was built in 1806-13.

Perronnet has embellished other towns with bridges of stone of great beauty; among which, that at Neuilly, consisting of five equal arches of 128 feet span, with a versed sine of 32; and that over the Oire at Maxence, remarkable for its light and novel piers, formed of four doric columns, the central intercolumniation being left open, are the most celebrated.

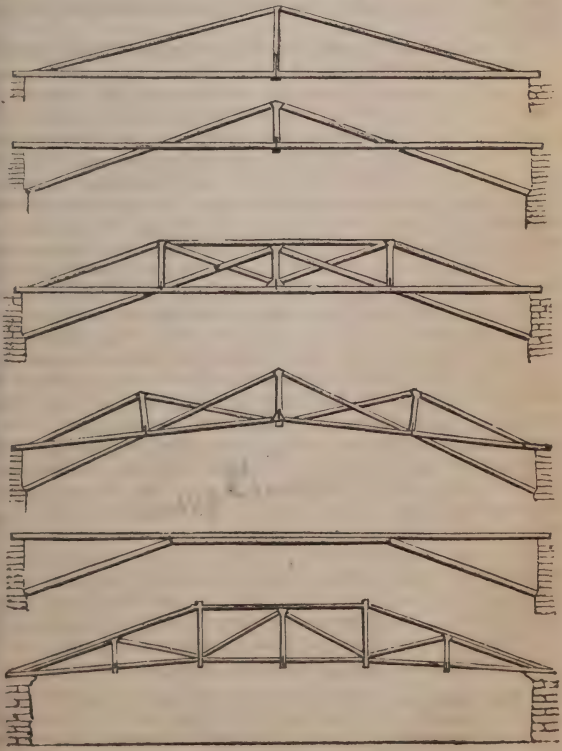
TIMBER BRIDGES

Must, for reasons before alluded to, have preceded the construction of those of masonry; and when the limits of the arch, as they were conceived, up to a comparatively recent period, were attained, recourse was had to timber for bridges, in those situations where stone ones could not be erected.

The advantage of timber consists in its lightness, and the great length in which it can be obtained in one piece; consequently, any structure composed of it, can be more rapidly put together than if masonry were the material; and fewer and lighter piers and abutments are also required. But a beam of timber of considerable length is incapable of bearing any great weight or strain, applied between its supported ends, and acting at right angles to its length.

To remedy this weakness, recourse is had to *trussing*, or *raming*, a simple and beautiful application of mechanical principles, by which the strain, or weight, of a timber structure is in a great measure made to act *lengthwise* instead of *across* each beam composing it.

The annexed figures will explain in what various manners timber beams may be trussed, or framed, so as to span a considerable width. The lowest is the outline of a timber



bridge, of 114 feet span, constructed over the Cismone, between Trente and Bassano, by the celebrated architect Palladio.

Every schoolboy knows Julius Cæsar's account of the wooden bridge he threw over the Rhine. This is the earliest notice we possess of such a work; and if that warrior's military skill had not been greater than his mechanical, his fame would scarcely have survived his structure, which, even for a first attempt, was clumsy and unscientific in the extreme.

Far otherwise was the celebrated timber bridge erected in 1758, at Schaffhausen over the Rhine, by a self-taught genius,—a common carpenter of the name of Ulric Grubenman. The rapid current of the river having gradually undermined the piers of a stone bridge at that place, it fell down in 1754, and it was resolved to supply its place by one of timber, as requiring fewer piers, and therefore not being liable to the same source of destruction. Grubenman offered a model of a bridge requiring no pier at all, but his design being considered too daring, the authorities insisted on one pier of the old bridge, which was intentionally left standing, being used as an intermediate support. The artist accordingly modified his design, and the bridge was built, apparently, in one span from shore to shore, but additional strength was given by beams springing from the pier in question. The length of the bridge was 364 feet, its breadth 18 feet. It was not in a straight line on the plan, but formed a very obtuse angle towards the current*. The bridge was an enclosed gallery,—the sides consisting of the framing of the complicated trusses necessary to support such an arch, and there was a roof over the road-way resting on these sides. This beautiful and wonderful work was entirely destroyed by the French, in their campaign of 1799.

Ulric had a brother John, no way inferior to himself in mechanical talent. This man, about the same time, erected a wooden bridge on the same principle, at Ruichenau, 240 feet in length; and the two brothers united their talents to build similar structures in various parts of Germany.

Wiebeking, another German workman, has erected nume-

* The reason for this is not apparent, as there was ample waterway, and therefore little force against the stone pier, which was the only part exposed to it; while it must have weakened the strength of the framing considered as a whole.

rous beautiful timber bridges in his native country since the commencement of the present century. He designed one of 610 feet span, with a versed sine of only 26 feet, the timber framing at the vertex to be only 4 feet deep.

In America, where timber is superabundant, that material is frequently used for constructing bridges on the largest scale. The earliest was erected by Palmer over the Piscatagua, near Portsmouth, in 1794, of 250 feet span. There is another at Trenton, over the Delaware, built by Burr, in 1804, of 200 feet span, and 32 feet rise, the depth of framing being only 2 feet 8 inches at the vertex.

But that at Philadelphia, over the Schuylkil justly deserves the name given to it of the *Colossus*, as exceeding all others in its span, which is no less than 340 feet, with a rise of only 20 feet, and a depth of 7 feet in the vertex. This stupendous arch was constructed by Wernwag, in 1813; it consists of three equal and similar ribs, each composed of seven thicknesses of planks, 13 inches wide, and 6 inches thick, cut to the proper curve, and the joints are alternated like those of masonry, to ensure strength. Each rib carries a trussed frame,—the two outer ones of which constitute the sides of the bridge; the road-ways between are roofed over, and as the whole is planked externally, the bridge is an enclosed gallery, lighted by numerous windows on each side; a simple lodge, or portico, at each end, contributes to the architectural beauty of this singular and simple work, which is in no way inferior to its mechanical †.

There is another bridge over the same river, of a similar construction, but consisting of three arches, the centre one 195 feet in span, the others 151. It is equally elegant as an object, though not so imposing as the last.

IRON BRIDGES.

The superiority of the British iron-manufactory, and the facility with which *castings* of the largest size are made in that metal, would naturally cause that material to be used in the construction of bridges, in situations where stone

† The reader will find a view, and descriptive details, in Sir Howard Douglas's work on military bridges; a work to which we again are happy to allude for its great interest, even to those who, like ourselves, cannot presume to judge of its professional merits.

could not be employed, for the same reason that timber would be had recourse to in well-wooded countries under similar circumstances.

The bridge over the Severn, at Colebrookdale, in Shropshire, was the first iron bridge ever constructed; it was cast by Abraham Darley, at the great iron-works there, in 1777. The chord is 100 feet, and the arch nearly a semicircle: the abutments were unfortunately erected in a loose soil, and by yielding, they caused an injury to the work which required extensive reparation; but though in constant use, the bridge is now as efficient as ever. The expense of the whole was about 6000*l.*

The next iron bridge was as great an improvement on the first in principle, as it was superior to it in magnitude, and yet in both respects it has been since far surpassed; that we allude to is over the Wear, at Bishops' Wearmouth, near Sunderland. This elegant arch is 240 feet in span, with a versed sine of 30 feet, and the frame-work at the vertex is only 5 feet in depth. It is elevated 100 feet above the water, so that vessels of 300 tons' burden can sail under it without striking their topsails. The abutments are beautiful masses of rustic masonry, and the effect of the whole bridge is equally imposing and graceful.

Mr. Telford, in the same year, 1796, erected an iron bridge at Buildwas, in Shropshire, which is remarkable as consisting of two arches, one partly sustaining and partly suspending the other: the roadway is laid on three ribs, or arcs, of 130 feet in span, and 16 feet rise. On each side of the bridge is another arch, springing from a lower level of the abutments, but rising above the outer two ribs to the top of the parapet, and, therefore, cutting or crossing those ribs in two points, the part of the roadway-rib lying between these, is partly suspended from the upper arc, and the two segments beyond the same points is supported by the portion of the arc below, though, at the same time, the three flatter arcs form perfect arches in themselves, and could support themselves without the additional segments*.

* This principle has been adopted by Mr. G. Leather, in the construction of an iron bridge over the Aire, near Leeds. The roadway is straight, and is entirely suspended by rods from, and partly carried, by iron arches, of 152 feet span, and 43 feet rise from the chord-line; these two suspending arcs are placed one on each side of a

This bridge has perfectly answered the expectations of all concerned in it, and the whole expense did not much exceed 6000*l.*

The bridge over the Thames at Vauxhall was originally intended to be a stone one; there are, consequently, nine openings, each 80 feet wide, which is a much less span than was at all necessary for an iron bridge; the effect, however, is pleasing as a whole, though it wants the lightness of an iron arch of great span.

The finest bridge of metal, perhaps, in the world, is that at the end of Queen-street over the Thames, usually called the Southwark Bridge; it consists of three arches only, the centre one being 240 feet in span, with a versed sine of only 24, or one-tenth of the chord, while that at Sunderland is one-eighth of the same length; the frame-work in the former is, however, six feet in depth. This was also the work of Mr. Rennie, who thus had the honour of being the architect of three matchless structures in the greatest metropolis in the world.

When the plan of the new London Bridge was in contemplation, Mr. Telford designed an iron bridge for the site, in *one* span of *six hundred feet!* with a rise of 65, and a depth of 6 feet only at the crown. That such a man could have accomplished anything he proposed, there is no doubt; we should have been glad if the suggestion had been adopted, even though we should have lost the present bridge by it.

The *Pont des Arts*, at Paris, is an elegant iron bridge of nine arches, the total length being 505 feet; it was constructed by MM. Assart and Dillon; it is used only by foot passengers.

The *Pont d'Austerlitz*, or *Pont du Jardin des Plantes*, is another iron bridge adorning the same metropolis, and is an elegant structure of five semi-elliptic arches; it was built in 1802-5, from designs by Bapré.

This paper would be incomplete without some notice of Floating Bridges, or Bridges of Boats, which, though com-

central carriage-way, and the foot-paths are on the outside of them. This singular and novel work is a true combination of the arch and suspension bridges; it cost about 4200*l.* The same gentleman had previously, in 1827, constructed a bridge on the same plan over the same river.

SOUTHWARK BRIDGE.

monly only temporary works, to facilitate military operations in war, are yet adopted on some occasions as permanent bridges over rivers; this is the case at St. Petersburgh, Presburg, Coblentz, and other continental towns.

The general principle of these bridges consists in a roadway, supported by boats of a particular construction, anchored in a line across the stream. They are advantageously adopted on rivers with powerful currents, which, in winter-time, bring down large masses of ice, which would endanger the piers of an ordinary bridge; on such occasions an opening in the floating bridge is formed by unmooring a few boats and removing the roadway, or else the whole bridge is made to swing round with the current and lie along the shore till the flood has subsided.

This power of cutting off the communication without injury to the bridge, is a recommendation which causes bridges of this kind to be used in frontier towns exposed to the attacks of an enemy.

Since any undulations in the river must affect the boats of a bridge, high winds cause a motion in the platform which is a drawback on their use, both as disagreeable and dangerous to passengers, and as straining the timber-work

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When we see the year in his prime and pride, decked with beautiful blossoms, and all goodly varieties of flowers, cheered with the music of birds, and stated in a sweet and moderate temper of heat and cold, how glad we are that we have made so good an exchange for a hard and chilling winter: and how ready we could be to wish that this pleasure and happy season might last all the year long. But herein (were our desires satisfied) we should wish to our own disadvantage: for if the spring were not followed with an intention of summer heat, those fruits, whose hopes we see in the bud and flower, would never come to any perfection, and even that succeeding fervour, if it should continue long, would be no less prejudicial to the health and life of all creatures: and if there were not a relaxation of that vigorous heat in Autumn, as the sap returns back into the root, we could never look to see but one year's fruit.—Bishop Hall.

PROPER MODES OF TAKING EXERCISE.

NOTWITHSTANDING the manifest advantages arising from the practice of taking regular exercise, in order to be beneficial it must be resorted to when the system is sufficiently vigorous to be able to meet it, and has been gradually prepared to undergo the fatigues attendant on it.

Dr. Combe remarks, in his *Physiology applied to Health*, that,—

In Summer, walking excursions to the Highlands of Scotland are common among the youth of our cities, and when proportioned in extent to the constitution and previous habits of the individual, nothing can be more advantageous and delightful. But not a season passes in which health is not sacrificed and life lost, by young men imprudently exceeding their natural powers, and undertaking journeys for which they are totally unfitted. It is no unusual thing for youth, still weak from rapid growth, and perhaps accustomed to the desk, to set out in high spirits, at the rate of twenty-five or thirty miles a day, on a walking excursion, and to come home so much worn out and debilitated that they never recover. Even a single day of excessive fatigue will sometimes suffice to interrupt growth, and produce permanent bad health. Many young men hurry on the premature developement of consumption by excessive fatigue during the shooting season, in cases where, by prudent management, they might have escaped it for years, if not altogether. The principle of not exceeding the point at which *exercise promotes nutrition and increases strength*, will serve as a safe guide on all occasions. and indicate the rate at which it may be extended. Old sportsmen know the rule by experience, and generally prepare themselves for the moors, by several weeks of previous training. The science and judgment which fox-hunters display in preparing their horses for their future exertions in coursing are well known, and might be still more usefully applied by their riders, to the training of their own families.

After many very judicious remarks on different kinds of exercise, Dr. C. concludes that division of

ject with a case which affords an extremely
e illustration of almost every one of them.
articulars were furnished to him by a young
who, at the time of his experiment, was about
en years of age, and growing rapidly.

' having passed the Winter, closely engaged in a
ry profession, and unaccustomed to much exercise,
induced, by the beauty of returning Spring, to
e a day to seeking enjoyment in a country excursion;
that purpose set off one morning in the month of
ithout previous preparation, to walk to Haddington,
of North Berwick, a distance of thirty-four miles.
at the time entirely unacquainted with physiology,
not aware that the power of exerting the muscles
ed in any degree upon the previous mode of life;
ught that if a man was once able to walk thirty
he must necessarily continue to possess the same
under all circumstances, while youth and health
ed. The nervous stimulus arising from his escape
e desk, and from the expected delights of the ex-
, carried him briskly and pleasantly over the ground
first twelve miles, but then naturally began to
e. Unfortunately, the next part of the road lay
a dull, monotonous, and sandy tract, presenting
ct of interest to the mind, and no variety of any
tion: so that the mental stimulus, already greatly
d in intensity, became still weaker. Being *alone*,
llect and feelings could not be excited by the plea-
companionship and conversation; weariness conse-
' increased at every step: and long before his arrival
th Berwick (twenty-five miles), ' every vestige of
ent had disappeared, time seemed to move at a
lously tardy pace, and every mile appeared double in

being aware that excessive exercise, without a suc-
g period of repose, is equally unfavourable to sleep
gestion, and having a lively recollection of the plea-
nd refreshment consequent upon eating a good
with an appetite whetted by a *proper* degree of
labour in the open air, he looked forward with con-
: to some recompense and consolation for his toils
linner should make its appearance. In this, how

ever, he was doubly disappointed; for, from having with too light a breakfast, and walked so far, his d organs were, in common with every part of his sys much impaired, that he looked upon the viands before him almost without appetite: and as they themselves not remarkably nutritive or digestible, fringed still further on that condition of muscula which consists in a full supply of nourishing arterial blood, made from plenty of nutritious food,—a condition which I have stated to be essential, especially in youth and during growth.

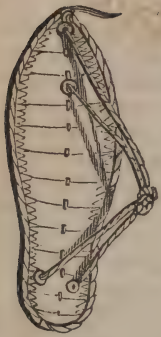
After a rest of two hours, and taking a moderate allowance of wine, which, however, he says, 'seemed to have lost its ancient virtue of imparting cheerfulness to the human heart,' he set out to complete the remaining ten miles to Haddington. The country was more beautiful and varied, but the charms of nature had, by this time, lost all attractions, for our pedestrian was now wholly occupied in counting the tedious miles yet to be traversed, and in making a pious vow that this *pleasure excursion*, though not the *first*, should certainly be the *last* in his li Being reduced to the utmost degree of exhaustion, required an extraordinary effort to persevere; but a last he arrived at Haddington, in a state of exquisite misery. Unable to read from fatigue, and having nobody to converse with, he sought refuge in bed at an early hour, in the expectation that 'tired Nature's sweet restorer, balmy sleep,' would visit his couch and bring him relief. But he tossed and tumbled incessantly till four in the morning, a period of seven hours, after which slee came on. Next day my youthful friend returned home in the stage-coach, wiser at least, if not the happier, for his pleasure excursion: and now makes the observation, tha if he had been instructed in the least degree in the nature of the human constitution, he would never for a moment have entertained an expectation of enjoyment from a proceeding so utterly in defiance of all the laws of exercise, as that of which he reaped the unpalatable fruits. He adds justly, that the number of young men who suffer in a similar way is by no means small, and that he has reason to be thankful that he has not, like some of his companions, carried his transgression so far as permanently to injure health, or even sacrifice life.

OES, AND THEIR VARIOUS FORMS.

vention of this useful article of dress must rily be attributed to a very remote period in story of the world, for as soon as mankind ade even a moderate progress in the arts of life, ttention would naturally be directed to the ance of some method for preserving the soles feet from injury. In preparing a covering for ad, the most delicate materials, such as straw, gs of wood, &c., were in the first instance d to, the only object being to protect the head the heat of the sun, and occasionally from but any substance calculated to guard the om injury, must be capable of enduring much and tear. On this account it is, that the t coverings for the feet, of which any traces were formed of leather.

first three engravings represent shoes, or sandals, (for the covering of the upper part of oot is a much later invention,) of Egyptian facture, and show the high state of civilization ypt nearly three thousand years ago.

e sandals of the Greeks are the next we have ice, and in these, the upper part of the foot is eft uncovered, although, perhaps, greater dex- is exhibited in the different methods of ing them on the feet. Much uncertainty, ver, exists, as to the correct forms of the ls of this celebrated nation, as most of the es which have been preserved are greatly da- d, and the feet have been restored by modern s: in addition to this, the greater number of tatues of their heroes, or gods, are represented their bare feet. The form of the coverings for eet of the ancient Romans is evidently derived the Greeks, but they assumed a greater variety



1. Egyptian.

2. Egyptian.

5. Grecian Sandal.

6.

8.

9.

in the other, the latter would be considered as in an abject state, unworthy of associating with the rest of the family, and doomed to perpetual obscurity, and the drudgery of servitude."

How this singular fashion arose, is uncertain; the common story in China is, that a certain lady of very high rank, happened to be gifted by nature with extremely small feet, and, no doubt, took good care that her advantage over the rest of her sex, should not be unknown; this naturally excited the emulation of others, and an endeavour was made to supply by art, that which was considered a deficiency on the part of nature.

This curious covering for the leg and foot (No. 12,) was in use among the Anglo-Saxons, it was employed chiefly by the higher classes, and by the clergy in general; a shoe was also worn along with it. These leg bandages, or garters, were at times very richly embroidered, and sometimes instead of being rolled one way, as in our engraving, they were employed and bound round contrary ways, so that when they were of two colours, the appearance resembled a Highland stocking; this was called cross-gartering.

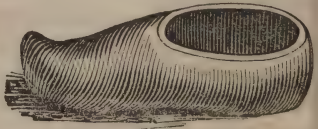
The shoes of the Anglo-Saxons were very simple, but, at the same time, well contrived for comfort; they were usually tied at the instep by a leather thong.

After the time of the Anglo-Saxons, when the nation began to import its fashions from other countries, the form of the shoes and boots was constantly varying, indeed, they appear to have been made rather according to the whim or caprice of the wearer, than in consequence of any settled fashion; we must not, however, omit to notice the long-toed boot (No. 15,) so much worn in the reign of Richard the Second. It is said by historians that these were so inconvenient in walking, that the wearer was obliged to loop them up to the knee by means of metal chains;

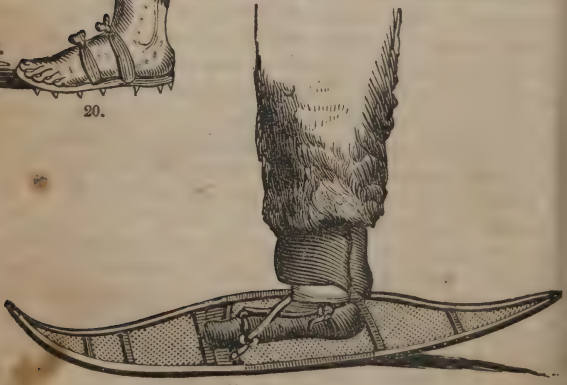
14. Shoe of Anglo-Saxon Lady.

15. Long toed Boot.

20.



19. French Wooden Shoe.



21. Snow Shoe

it is also said that once on the field of battle, the young cavaliers were so encumbered by these unnaturally long toes, that they were obliged to cut them off in the heat of the conflict.

In the seventeenth century, the boots of gentlemen were ornamented with tops, sometimes elegantly fringed with lace, and the shoes also had immensely large rosettes of different-coloured silks.

We are coming now to comparatively modern times, and some now living can remember the high-heeled shoes worn by the ladies in the last century. No. 17 represents a shoe of this description, such as was worn by the fashionable men of the day.

The shoe and boot represented in Nos. 18, 19, are still worn in France: the jack-boot has been so often noticed by travellers and others, that it hardly needs description; it is, however, perhaps, not generally known, that the foot of the wearer of this unwieldy boot does not reach the sole, but is received in a space about four inches above the ground, so that the heel of the wearer is immediately in front of the spur. The wooden shoe is formed out of one solid piece of wood, and is worn in France chiefly by the children and women in country places. It is the wooden shoe alluded to by Goldsmith's porter in the *Citizen of the World*, who, while resting from his load, declares the French to be only "fit to carry burdens, because they are slaves and wear wooden shoes."

No. 20 is a kind of sandal worn by the mountaineers in Switzerland, studded with iron spikes, to prevent the foot slipping.

The snow-shoe is formed of a frame-work of wood, strongly interlaced with thongs of leather; it is employed by the Esquimaux and the Canadians, to prevent their sinking into the snow, when crossing their extensive plains. This shoe causes great

pain to the wearer until after considerable practice in the use of it.

We cannot better conclude this account, than by noticing the machines invented by Mr. Brunel for the purpose of making shoes for the Army and Navy. The chief difference between his method and that in common use, consisted in the employment of nails of different lengths, for the purpose of uniting the various parts of the shoes, the only part subjected to the operation of sewing being the three pieces of which the upper-leather is composed, namely, the *vamp* and the two *quarters*. The cutting-out is performed by large steel punches of the proper form; the holes to receive the nails are made with the greatest regularity, and by a very simple contrivance: the nails, which are also made by the same machine, are dropped with unerring certainty in their places, and at one blow they are all driven in to the proper depth.

The nails employed are of three kinds. 1. The *long nails*, which form a complete row, as near as possible to the edge of the whole shoe, passing through the two soles, the welt, and the upper-leather; the heel is also fastened on by a row of these nails round its edge. The heads, or thick ends of the nails, are seen on the lower side of the soles, and keep the leather from wearing.

2. The *tacking nails*, which are of such a size as to pass only through the *sole* and the *welt*. Of these there is a row all round the edge of the foot, but further from the edge than the row of long nails.

3. The *short nails*, which only penetrate through the thickness of the lower sole; they are disposed in parallel rows across the tread of the foot, and also in a double row parallel to the outline of the toe, at about three quarters of an inch from the edge.

WITCHES.

Matthew Hopkins, the Witch-Finder.

Among the spots and blemishes which defaced "*Old England*,"—we mean England in the days even of good Queen Bess, King James, and our Charles's, none appear of a darker dye than the evils of superstition. And of all the forms under which the superstition of our ancestors is presented to our view, the notion respecting the existence and power of witches, is perhaps the most hideous and abominable. If the delusions of this kind had been so far harmless as to have kept within the minds of those persons whom they misled, we might, indeed, have wondered at such gross ignorance prevailing in the seats of learning, and amidst the bright periods of our literary history, like "the moping owl" in broad sun-shine; and we might have classed them among such *Vulgar Errors*, as those of "The philosophers' stone which should turn all to gold;" "The hidden virtue in precious stones," or, "The geese, which were produced from the fish called Barnacles!"

But the opinions respecting witches, were as cruel as they were false: and our feeling of the ridiculous, is quickly turned into that of sorrow and pity, on finding not only that some of the most learned, and, generally speaking, humane of our countrymen, in a past age, held the common notions upon witchcraft, but that *thousands* of poor, old, and innocent persons, mostly women, were condemned and executed for this alleged offence, in Great Britain alone! We say "*alleged* offence," when we consider the absurd stories told, and the many impostures which we know to have been contrived on the subject: at the same time, it may be well to remember the observation of Sir William Blackstone.—"It seems to be the most eligible way to conclude with an ingenious

writer of our own (Addison,) that, in general, there has been such a thing as witchcraft, though one cannot give credit to any particular modern instance of it." Too many reported cases, indeed, there are, which, from the monstrous nature of the charge, the deep injustice of the kind of evidence, and the revolting barbarity attending the *last* resort against the accused, were a disgrace to our ancient criminal calendars. Dr. Grey, in his notes to the poem of *Hudibras* says, that he had seen an account of between three and four thousand persons, who suffered death for witchcraft in the king's dominions, from 1640 to 1660.

It should be a cause of thankfulness to us, that owing to the vast, though gradual, spread of sound knowledge since that time, and more especially in consequence of the mild and pure light which is shed into almost every cottage by the Gospel, now that the Bible may be read by all in their native tongue, we are freed from these shameful and degrading fetters; except, indeed, in some few instances in distant villages. But to show that the evil once reached even to the highest, both in rank and knowledge, we quote a passage from a sermon preached before Queen Elizabeth, in 1558, by Bishop Jewel, in which the mischiefs attributed to the agency of witches, and the effects of the "evil eye" are plainly declared. "It may please your grace to understand, that witches and sorcerers within these last four years are marvellously increased within this your grace's realm. Your grace's subjects pine away, even unto the death; their colour fadeth, their flesh rotteth, their speech is benumbed, their senses are bereft. I pray God, they may never practise further than upon the *subject*." The climax of this, must surely have been extremely startling, and have

> Moved the stout heart of England's queen,
> Though Pope and Spaniard couldn't trouble it.

Bishop Hall speaks of a village in Lancashire, where the number of witches was larger than that of the houses. The learned Joseph Glanvil, on the occasion of an invisible drum, beating every night at the house of a Mr. Mompesson, in Wiltshire, turned his thoughts to the subject, and in 1666, published his "*Sadducism refuted, or Philosophical Considerations touching the being of Witches and Witchcraft*," though the story of his mysterious drummer, if the plot could have been traced, would, no doubt, have been found as foolish a one as that of the Cock-Lane ghost. Even the rich gold of Sir Thomas Browne's master-mind had the same species of alloy: "For my part," says he, "I have ever believed, and now do believe, that there are witches. They that doubt of these, do not only deny *them*, but spirits, and are obliquely, and upon consequence, a sort not of infidels, but atheists." To these instances, taken from the professions of Divinity and Medicine, we may add those of certain high legal persons, with imaginations equally warped. Lord Coke gravely draws a difference between a *conjuror*, a *witch*, and an *enchanter*. And the great and good Chief-Justice Hale, so late as the year 1664, in presiding as judge on the trial of two reputed witches, at Bury St. Edmund's, betrayed such a want of firmness in his mode of leaving the matter to the jury, that the poor women were found guilty upon thirteen several indictments, and executed, declaring their innocence to the last.

Follies of the same kind, however, are found recorded even in our parish registers, as will be proved by the following entry, which we extract literally from the register of burials of a city parish, St. Olave's, Hart Street, the residence, during the reigns of Elizabeth and some of her successors, of several

noble and distinguished families. "1579. 16 MAYE. —*Was buried Agnes Peirsonn, Sv̄ant, to Mr. Paule Banninge*, aged 30 years;* BEWITCHED." It was imperative on the parish officers, at that time, to note down the complaint of which the party had died; for a few months before the occurrence of Agnes Peirsonn's name, this is inserted as a fresh order. "November 1578. *A new com̄andment from the Quene and her consill, to endite the names, the christian names, the age, and the disease of every person dyeing within the parish.*"

To these authorities, if so they may be called, must be added that of James the First; whose silly work, entitled *Dæmonologie*, reprinted in London in 1603, having first seen the light in Edinburgh, and coming, as it did, from a royal pen, found crowds of admirers, and made witchcraft fashionable. In his reign a new and severe statute was passed against witches, describing the crime in various particulars†, and enacting that offenders, duly and lawfully convicted, should suffer death. The old laws passed in England and Scotland against conjuration and witchcraft, which made the crime felony without benefit of clergy, were repealed by a statute 9 Geo. II. c. 5; doubtless to the great comfort and delight of many ancient and harmless females.

But we proceed to make some mention of the remarkable character whose portrait we have given. Matthew Hopkins of Manningtree, in Essex, in the evil days of Oliver Cromwell, was appointed Witch-

* A very eminent and wealthy merchant, father of Paul, first Viscount Bayning of Sudbury, and ancestor of the present Lord Bayning.

† Such as calling up, or consulting, covenanting with, entertaining, feeding, employing, or rewarding any evil spirit; taking up dead bodies from the grave to be used in sorcery; attempting by magic arts to discover hidden treasure or restore stolen goods; or by enchantment, to cause the hurt of any man or beast.

finder for the associated counties; and it is an accredited fact, that he discovered and brought to the stake or gallows, in one year, sixty poor creatures, from the county of Essex alone, as reputed witches. He is most likely the person alluded to by Butler in his *Hudibras*, as having been, by the Oliverian Parliament,

> Fully empowered to treat about,
> Finding revolted witches out.

The mode of detecting these unhappy beings was various, and Hopkins was celebrated for his discernment in such matters, being looked upon as a great critic in marks and signs. The old, the indigent, and the ignorant, such as could neither plead their own cause, nor hire an advocate, were the miserable victims of this knave's credulity, spleen, or avarice. One method to which he had recourse, was to weigh the supposed criminal against the Church Bible, which, if she was guilty, would weigh her down. Another was, to make her attempt to repeat the Lord's Prayer. It was thought that no witch could ever do this entirely, but would always omit one part or other. A witch could not weep more than three tears, and that only out of the left eye. This want of tears, was, by the Witch-finders, and even by some judges, deemed a substantial proof of guilt!

Swimming a witch was a kind of proof very generally practised. She was cross-bound, the right thumb to the left toe, and the left thumb to the right toe; and, thus prepared, thrown into a pond or river. If guilty, she could not sink, if innocent she was probably drowned. King James, who is said to have advised, if he did not invent this kind of ordeal, gave the following sapient reason for the effect produced; That "the culprit having by her compact with the devil, renounced the benefit of the waters of baptism, that

element in its turn renounced her, and refused to receive her into its bosom." The burning alive of any animal, supposed to be bewitched by her, such as an ox, or a hog, would force the witch to confess. Incredible as it may appear in the present day, when so much is done to inform the mind and humanize the manners of all classes, an instance of this last superstition occurred recently. It is related in the *Morning Herald;* in the month of December, 1834, that a gentleman being alarmed by the horrible screams of some animal in extreme pain, upon going to the spot, discovered a monster in human shape, in the act of roasting, or burning alive, a young pig; declaring that he had reason to believe that the whole litter was bewitched, and that this was the only means of discovering who was the witch, and also of curing the rest. It is scarcely necessary to add, that the gentleman ordered the poor animal to be instantly killed, to the great annoyance of this dupe of a savage superstition.

Another mode of discovering witches, which was considered very efficient, as it most frequently extorted confession, was the following. The suspected person was placed in the middle of a room, upon a table or high stool, cross-legged, or in some other uneasy posture, to which, if she would not submit quietly, she was tightly bound with cords. Here she was watched, kept without food, and prevented from going to sleep for twenty-four hours, during which time, it was thought, her imps, or familiars, would come to her; till weakened in mind with terror, and exhausted in nature for want of necessary refreshment, the unfortunate creature was frequently frightened and driven into fancying herself possessed of supernatural powers; and by avowing crimes which existed only in her over-excited imagination, afforded further triumph to those ignorant or designing persons, who trained

MATTHEW HOPKINS.

in the dying agonies of these victims. Witch-finders are said to have received about 20*s.* a head for all who were condemned.

There is in the Pepysian Library at Magdalene College, Cambridge, a very rare print of Matthew Hopkins, the most notorious of these informers. He is represented, as in the annexed cut; but engaged at his "dreadful trade," and surrounded by a variety of strange objects, the chief being a couple of witches. One of them named Holt, is saying, by means of a label, "*My impes are,* 1. *Ilemauzar;* 2. *Pye-wackett;* 3. *Pecke in the Crown;* 4. *Griezzel Greedigut.*" Four animals are in attendance, *Jarmara,* a black dog; *Sacke and Sugar,* a hare; *Newes,* a ferret; and *Vinegar Tom,* a bull-headed greyhound.

Hopkins at length met the same fate which he had prepared for so many others. Suspected of witchcraft, he himself underwent the experiment of swimming in his own way; and was, upon the event, (the tremendous alternative of appearing to float!) condemned and executed as a wizard.

SURELY a sense of our mortality,
A consciousness how soon we shall be gone,
Or if we linger—but a few short years—
How sure to look upon our brother's grave,
Should of itself incline to pity and love,
And prompt us rather to assist, relieve,
Than aggravate the evils each is heir to.—ROGERS'S *Italy.*

WHATSOEVER convenience may be thought to be in falsehood and dissimulation, it is soon over; but the inconvenience of it is perpetual, because it brings a man under an everlasting jealousy and suspicion, so that he is not believed when he speaks truth, nor trusted, when perhaps he means honestly. When a man hath once forfeited the reputation of his integrity, he is set fast, and nothing will then serve his turn, neither truth nor falsehood.—STEELE.

THE ATMOSPHERE.

THERE is a class of fluids from which we derive so few of the sensations that come to us from other material substances, that we scarcely admit them to be matter. These are called AIRS, or AERIFORM FLUIDS, and the science which treats of them, is called PNEUMATICS. With the properties of one fluid of this class we are far more intimately concerned than with those of any other material substance; we are, in fact, perpetually immersed in that fluid; it enters most intimately into the composition of our bodies, we swallow a huge volume of it at every inspiration, and the very principle of life within us appears to feed upon it. One of its constituent elements is indeed so necessary to the sustenance of the power of living, that to cease to breathe, and to cease to live, have come to be used as synonymous expressions. This fluid is the ATMOSPHERE. It surrounds the globe of our earth on every side, forming a shell of vapour, which encloses the earth itself as its solid portion, or nucleus

Only few of those sensations by which we are accustomed to recognise the existence of external things, appear to come to us from the air. We do not see it, as we do other material substances; we cannot touch it, as we do them; we are not conscious that it has weight, as they have; it does not appear to require any force to move it, as it does to move them; in short, there does not *seem* to be a single sense affected by it, although it enters largely into the constitution of every single sensation.

One great cause of the deception under which we thus labour, is that we are *born* into the air. Our senses are subjected continually to those affections which, if the mind took notice of them, would con-

stitute perceptions of its existence from that period when it takes notice of nothing*. There are, however, other causes arising out of the conditions of the equilibrium of fluids, which enter largely into the explanation of this mystery.

The first of these is, that, by the nature of that equilibrium, when a solid body, of whatever form, is immersed in a heavy fluid, the pressure of that fluid, when at rest, produces in it no tendency whatever to move *horizontally*; there being, for each horizontal pressure on one side of it, an equal and opposite horizontal pressure on the opposite side, which two pressures neutralize one another. The *vertical* pressure of the fluid produces in the body a tendency to move upwards, equal only to the weight of the fluid it displaces. It follows that the air in which we are immersed does not, by reason of its pressure when at rest, tend to move us *horizontally*, in one direction more than another. It presses equally in *all* directions, and this is the case in every position into which we can throw our bodies.

The parts of the body are either hollow, as the chest; they are composed of solid parts, or bones; of fleshy or muscular parts; of nerves and tendons; or of vessels *filled* with fluid, as veins and arteries. The parts called hollow are not in reality so, but are filled with the same fluid, the air, in which the whole of the external portion of the body is immersed;

* It seems to be a law of our nature that the mind should not take notice of those affections of the organs of sense which are constantly repeated, and, therefore, *à fortiori*, of those which are *continual*. Examples of this are exceedingly numerous, and must present themselves to the mind of every one. Were it not for this *habit* of the mind, how many secrets of nature would be laid open to us! May it not, for instance, be possible that all the internal operations of the human body, each affecting some nerve or organ of sense, would, if the mind did but take notice of the affection, present itself to *its* eye, as comoletely as the parts of a piece of mechanism to the external organ.

and this air contained internally, has a direct communication, through the passage of the wind-pipe, with the external air; so that, in fact, the air contained internally, and the external air, form different portions of one continuous fluid. Thus the pressure of the air externally upon the ribs, is borne by an opposite pressure of the *air* within; and neither pressure is felt to have a tendency to alter the form of the cavity of the chest.

If, however, we exhale any portion of air from the chest, we become immediately conscious of a *diminution* of the internal pressure outwards, and an *excess* of the external pressure; the chest becomes oppressed, and, by a peculiar mechanism supplied by nature for that purpose, its dimensions contract, until the included air is again sufficient in quantity to supply the requisite pressure from within. It is for reasons of this kind that divers, when at a great depth, experience a severe pressure upon the ribs; the external pressure upon the chest being increased by the great weight of the water, and thus made to exceed the opposite internal pressure of the air.

Those portions of the body which do not communicate with the external air, and thus become filled with it, are all, whatever be their nature, completely saturated by fluids. Thus the bones are porous, and their pores are occupied by fluid secretions; the muscular portion of the body, or the flesh, is saturated by the blood; the nerves and sinews are tubes, each apparently serving as the conduit of a fluid.

It appears, then, that the mass of the human body may be considered as an accumulation of solid atoms, each separately immersed in a fluid, and it follows that the pressure upon any portion of the external surface of the body is propagated equally throughout its *substance* by means of the fluids, and that

each solid particle thus sustains pressures equal in every possible direction; so that, by reason of these pressures, it can have no tendency to move either in one direction or another. As the pressures upon each particle thus separately neutralize one another, it follows that the particles do not press *upon one another**. Thus then we see a reason why the external pressure of the atmosphere, which is exceedingly great, being altogether little short of 30,000 pounds on each individual, does not tend to press the parts of the body upon, or against, one another, and producing, therefore, no excitement of the nerves, is not felt.

Were the enormous pressure of the atmosphere any otherwise applied to our bodies than by the intervention of the fluid in which we breathe, it would be utterly impossible that the motions of the parts of the body, constituting life, should proceed; the slender and fragile mechanism, indeed, of its organs could not fail to be destroyed. By that admirable property, however, of the equal distribution of fluid pressure, not only are we enabled to sustain the 30,000 pounds' weight of atmospheric pressure without feeling it, but that pressure may be *doubled* by immersing the body thirty-six feet under water in a diving-bell, and yet no single nerve, not even the most delicate of the millions which overspread the body will, by reason of that pressure, experience the least perceptible excitement.

Such are the effects which result from the body's being immersed in a fluid, and from its parts being (according to an expression of Paley,) *packed* in fluids.

We now see plainly how the air *may be* (as it really is) a *fluid* possessing weight, and, therefore, pressing heavily upon us, and yet we be altogether uncon-

* Of course it is here supposed that the external pressures spoken of do not alter the external form of the body.

scious of the pressure. We may, however, very readily put the matter to the test of experiment. Let us destroy the equality of atmospheric pressure, by removing the air from any one portion of the body; we shall then at once be conscious of the existence of pressures upon the other portions, and of the great advantages we derive from an absolute and entire immersion in it. This removal of the air may be effected by various means; there is, however, a machine called the air-pump, which is commonly used and expressly intended for that purpose. By means of this machine, the air may be removed from any given portion of the body; its pressure upon the rest of it will then at once be perceived. If, for instance, the hand be applied so as to cover the open top of a vessel, of which the lower portion communicates with the air-pump, and if the pump be then put in action, so as to remove the air from the vessel, and, therefore, from the under-surface of the hand, the pressure of the air upon the upper surface will at once become apparent; the hand will be firmly pressed down upon the edges of the vessel, and, at length, it will be found impossible to move it; the blood-vessels will become distended, the back of the hand will be bent inwards, and the operation may be carried on until a pressure is produced equal to the weight of a column of thirty inches of mercury, a weight probably sufficient to rupture the mechanism of the hand.

The process of cupping is an example of this *partial* removal of pressure from the surface of the body. A small portion of spirits of wine is put into the cupping-glasses and lighted; by the heat thus produced, the air, which before occupied the glass, is in a great measure expelled, and its place supplied by vapour. In this state the glass is applied to the

surface of the skin; the flame is extinguished, the vapour becomes condensed again into a liquid, the air loses its heat, and with its heat, its tendency to expand; thus its pressure upon the surface of the body (underneath the glass) becomes less than before, and less than the pressure upon other portions of the body; and the result of this unequal pressure is an immediate disorganization of the surface beneath the glass; the flesh and muscular parts swell out in a surprising manner, the vessels become distended, and blood is at length seen to gush from the pores of the skin.

Suction presents another striking example of the partial removal of pressure. There is a certain operation of the muscles, by which the air may be removed from the cavity of the mouth: if this exhaustion takes place when the lips are applied to any portion of the skin, the result will be a removal of the pressure from that portion of the surface of the body, and a consequent displacement of the skin beneath; moreover the exterior surface of the lips sustaining the atmospheric pressure, whilst the interior portion in contact with the skin is free from it, the two are brought closely in contact, and pressed together.

It is thus that snails attach themselves firmly to walls, or to the trunks or boughs of trees, and may be seen even to crawl with their bodies suspended beneath them. The under portion of their bodies is furnished with powerful muscles, which enable them to form a hollow space or cavity in any portion of its length. Their method of fixing themselves to any surface, is to raise their bodies into a hollow or cavity, producing a vacuum underneath this cavity, the edges of which are closely pressed upon the surface, and the whole body suspended to it by the external atmospheric pressure. Attaching in this manner,

different portions of their bodies successively to different parts of the surface on which they wish to move, they may be seen walking suspended not only as to their bodies, but the shell which serves them as a habitation, not only up perpendicular walls, but along the smooth surface of the ceiling of a room.

There is a plaything of children called a sucker, which acts precisely upon the principle we have been explaining. It consists of a circular piece of leather, which is exceedingly soft and pliable, and suspended by its centre from a string. If this be wetted, and applied to the surface of a stone, or any smooth heavy mass, and then an attempt be made to remove it by pulling the string, it will be found to oppose a powerful resistance.

The reason of this is obvious. The string being pulled, the leather is slightly raised in its centre, and the cavity beneath it is a vacuum; no air having been allowed to enter by reason of the close contact of the edges of the wet leather with the stone. The pressure of the air is thus removed from that portion of the stone which is beneath the leather, and its pressure upon the opposite side of the stone is unsustained; the stone is, therefore, by that unsustained force, pressed towards the leather, and, by the pressure of the atmosphere on its *external* surface, the leather is pressed against the stone.

It is precisely upon this principle that flies are enabled to fix themselves upon a perpendicular pane of glass, or upon the ceiling of a room. They are enabled to raise the central portions of their feet as the centre of the sucker is raised by the string, and a vacuum being thus formed underneath the foot, it becomes fixed upon the surface on which it is planted.

[Abridged from Moseley's *Mechanics applied to the Arts.*]

THE RUINS OF COWDRAY HOUSE,
MIDHURST, SUSSEX.

ABOUT a quarter of a mile eastward of Midhurst*, are the remains of Cowdray House, once the splendid seat of the family of Montague, but now only a venerable ruin. Reduced to its present state by the accident of fire, and not by the hand of time, it still presents a fair front, which, situated as it is a little off the high road from London to Chichester, might, at first sight, be imagined by the traveller, unacquainted with the place, to betoken an ancient and lordly, but still habitable mansion. It stands in a valley, near the banks of the river Arun, which runs between two well-wooded hills through Cowdray Park, a noble estate consisting of 800 acres, abounding in fine old trees, particularly Spanish chestnuts, of which there is a long and handsome avenue, called the Chestnut Race, near the neighbouring village of Easebourne.

There was anciently a manor-house at Cowdray, belonging to the Bohuns, who took the title of Baron from the town of Midhurst; but Cowdray seems to have afterwards become the property of the crown, as it was granted by Henry the Seventh to John Lord Montague; and, on the division of his property, passed to Lucy, his third daughter, whose second husband was Sir Anthony Brown, a person of ancient family, and Great Standard-Bearer of England. William Fitzwilliam, Earl of Southampton, the son of this lady by a former husband, may be considered as the founder of the structure, the remains

* A small town between eleven and twelve miles north-east of Chichester, which probably received its name from being situated in the midst of woods, *hurst* being a Saxon word for a *wood*.

of which are represented in the engraving, he having received a royal patent early in the reign of Henry the Eighth, to add to the park, and build a castle of stone: and the visiter may now see the gothic letters, W. S. the initials of this nobleman, carved on the richly-wrought stone ceiling of the entrance-porch. On his dying without issue, the estate went to his half-brother, Sir Anthony Brown, whose son, the first Viscount Montague, greatly improved and enlarged the house.

This noble residence was twice honoured by a visit from royalty. King Edward the Sixth, in 1547, in a letter to his friend, Fitzpatrick, speaks of Cowdray as a "goodly house of Sir A. Brown's, where we were marvellously, yea, rather excessively banketted." And there is an old printed description of "The honorable entertainment given to the Queen's Majesty (Elizabeth,) in her progress at Cowdray, in Sussex, by the Right Hon. the Lord Montagu, in 1591." This was the son of the said Sir Anthony. After a flourishing account of the reception of her Majesty, in which she was addressed as "The Miracle of Time," "Nature's Glory," "Fortune's Empress," "The World's Wonder!" it states, by way of stepping from the sublime, that, on the following day, she was "most royallie feasted; the proportion of breakfast was three oxen, and one hundred and fortie geese!" During the week of the Queen's stay at Cowdray, flattery and feasting were the order of the day; and she was pleased to hear the fulsome addresses of persons disguised as "pilgrimes, with their russet coats and scallop-shells," and "wild men, clad in ivie," and "anglers at goodlie fish-ponds," who, in their peculiar costumes, successively uttered strange and forced conceits upon her high birth, wisdom, and beauty, even comparing her to a goddess, who had condescended for once to light upon

This dusky spot, which men call earth.

On going through the arbour to take horse for Chichester, we are told her Majesty knighted six gentlemen, including my Lord's second son, Sir George Brown.

In Midhurst Church, on the south side near the chancel, is a large coloured and gilt monument, or rather pile of monuments, erected to the memory of certain members of this family. It is enclosed by iron rails, and consists of a marble altar-tomb, upon which are placed two full-sized recumbent figures of women in the rich cloaks and dress of the times, with ruffs round their necks, their heads resting on pillows; at the feet of one is an unicorn chained. But the chief figure of all, for there are many on the monument, is that of an old man with a beard, in rich armour and cloak, kneeling on a cushion before a square altar, round and below which are inscriptions, stating that here was buried Anthony Brown, Viscount Montacute, chief standard-bearer of England, K.G., with his two wives, Lady Jane Ratcliffe, daughter of Robert, Earl of Sussex, and Magdalen, daughter of William Lord Dacre. This Viscount died at Horsley, in Surrey, in 1592.

It may appear remarkable, that though a determined Papist, he should have received such marks of esteem and confidence from Elizabeth, as are implied by his appointment as her ambassador to Spain, and by her gracious visit at his family mansion; but he was a loyal and trust-worthy man, and this was his recommendation to his royal mistress.

In wandering over the park at this day, we cannot, indeed, imagine that we look upon the very trees under which sat the lion-hearted queen for about the year 1770, the then viscount employed

the famous Lancelot Brown, who, from a word he often used in advising improvements in lawns, gardens, &c., was called *Capability* Brown, and who removed some of the old oaks from Cowdray, placing formal clumps instead. Lately, however, a better style has prevailed, and among the "sunny spots of greenery" are to be found plenty of fine trees freely spread about the grounds.

Cowdray House was built in the form of a square, the chief front being towards the west, in the centre of which was the gate, flanked by two towers. The east side contained the chapel, hall, and dining-parlour, superbly fitted up, and decorated with paintings and statues: at the upper end of the hall was a buck standing, carved in brown wood, having on the shoulder a shield with the arms of England, and under it the arms of Brown, with many quarterings carved in wood. There were ten other bucks as large as life, standing, sitting, and lying, some with small banners of arms supported by their feet. This hall and staircase were pictured with the story of Tancred and Clorinda from Tasso. The parlour was adorned by Holbein, or some of his scholars. On the south of the quadrangle was a long gallery, in which were, coloured in stucco, the twelve apostles as large as life; and on the north side was another gallery, containing many whole-length family pictures,—also sacred and historical pieces, some of which were brought from Battle Abbey. The paintings on the walls were saved during the Civil War in the time of Charles the First, by a coat of plaster laid over the stucco: but one of the officers quartered here, exercising his weapon against the wall, broke out of one of the groups the head of Henry the Eighth, which was afterwards replaced.

This beautiful and massive structure was destroyed

by fire on the night of the 24th of September, 1793, charcoal having been left about by the workmen.

The ruins of the west side of this magnificent mansion contain the most perfect traces of the general architecture, and exhibit proofs of its amazing strength. Within the quadrangle, and about the premises, lie several fragments of curious sculpture; and the broken column,

Like the baseless fabric of a vision,

presents to the reflecting mind, a fit emblem, not only of human glory departed, but of the fate which, even at the time of this lamentable loss, yet impended over the family. For by a sad coincidence, exemplifying the saying that misfortunes often come together, a few short weeks after this stately pile was destroyed, the noble owner, the young Viscount Montague, during the life of his mother, and before the intelligence of the fire could reach him, was drowned, together with his fellow-traveller, Sedley Burdett, Esq., brother of the present Sir Francis Burdett, Bart., in rashly venturing to navigate the falls of the Rhine at Schaffhausen, in October, 1793 *. His estates devolved by will to his only sister, married to W. S. Poyntz, Esq., the present Member of Parliament for Midhurst, who resides at Cowdray Lodge, a small but elegant house in the park, about a mile from the ruins.

The title went to the next heir male, Mark Anthony Brown, who was descended from the second son of the first Viscount Montague, and who died in 1797. The claim to the peerage then became dormant, if not extinct.

* For a mention of the fire, and of the still more disastrous catastrophe which followed it, see the *Annual Register* for 1793.

PUBLIC LIBRARY AT CONSTANTINOPLE

"It is a ridiculous notion which prevails among us," said Sir William Jones, many years ago, "that ignorance is a principle of the Mohammedan religion, and that the Koran instructs the Turks not to be instructed." There is little question that even now we are too much accustomed to regard the followers of that faith as necessarily rude and ignorant beings, men who will neither cultivate learning themselves, nor allow others to do so; there is still less question that the articles of their creed afford us no ground for such an impression. Mohammed not only permitted, but advised his people to apply themselves to the acquisition of knowledge; "Seek learning," he tells them, in one of his precepts, "though it were in China." The high estimation indeed, in which he held it, is abundantly shown in his extravagant declaration, that "the ink of the learned, and the blood of martyrs, are of equal value in the sight of Heaven." Nevertheless, it must be confessed, that at the present day, there is no Mohammedan people remarkable for proficiency in literature or science; the existing race of Turks, who afford us the readiest specimen of a Moslem nation, are a set of barbarians, as proud as they are ignorant. The early sultans, as well as their predecessors, the Saracen Caliphs, were the zealous patrons of knowledge; "Be the support of the Faith, and the protector of the sciences," was the dying injunction of the first Osman to his successor Orckan, in the beginning of the fourteenth century. The later sovereigns of the Turkish empire have been less zealous in the cause of learning; it is possible, that as the fanaticism of their subjects has abated, the monarchs have become unwilling to remove their ignorance, lest the consequences should be detrimental

to both the spiritual and the temporal despotism which afflict their country.

One of the modes in which the early sovereigns of Turkey have testified to posterity their regard for letters, is the establishment of *Kitab-Khanès*, or public libraries, in the great cities of their empire, either in connexion with the mosques and colleges, or apart as distinct institutions. Constantinople possesses thirty-five, none of them containing less than 1000 manuscripts, and some more than 5000.

Our readers may acquire a good idea of the internal appearance of one of these libraries, from the engraving contained in the preceding page; the form of the books, which, with some very few exceptions, are all manuscript, may also be seen in the group which occupies the front of the view. Each volume is bound in coloured leather (red, green, or black,) and is enclosed in a case of similar material, which protects it from the dust, and from the worms. The title of the work, instead of being written, as with us, upon the back of the book, is marked first upon the edges of the leaves, and then again on the edge of the outer covering. Cases, with glass or wire-work fronts, are ranged along the walls of the library, or in its four corners; and in those the volumes are deposited, resting on their sides, one above another.

These libraries are open on every day of the week, except Tuesday and Friday; visiters are allowed to read any books, to make extracts from them, and even to transcribe a whole manuscript. The subjects of the greater part of the works, are, of course, analogous to the usual studies which are followed in the colleges, or *medressès*; and as law and theology alone occupy the attention of the students, the mass of books consists of copies of the Koran, and commentaries upon it, with collections of the oral laws of Mohammed, and works on jurisprudence. The

manuscripts are all written on the finest vellum, and some of them afford beautiful specimens of penmanship; each library has a catalogue. Most of these different collections are continually being augmented by the produce of the surplus funds arising from their original endowments, and also by the liberal contributions of private individuals. The scribe who writes a fine hand, generally regards it as a duty to make a transcript of the Koran at some period of his life, and bestow the copy upon one of the Kitab-Khanès. Notwithstanding the necessary dearness of books where printing is not practised, every citizen takes care to acquire a certain number in the course of his life; and the lawyer, the statesman, or the man of letters, who possesses a fine library, bequeaths it to some public library, that he may receive the benedictions of those who avail themselves of his liberality.

Not many years ago it was a favourite opinion that there must exist in the libraries of Constantinople some fragments of ancient literature, which had escaped the general destruction occasioned by the Turks, when they captured the city in the fifteenth century. In the year 1799, a strong desire of bringing to light these concealed treasures, or, at all events, of settling the long-debated question of their existence, led the English government to determine upon sending in the suite of Lord Elgin's embassy some competent person who should conduct the required examination. The plan is said to have originated with Mr. Pitt and the late Dr. George Tomline, Bishop of Lincoln; in all probability it was conceived by that eminent prelate, and readily patronized, as a matter of course, by the enlightened minister. The individual chosen for the execution of the task, was the late Rev. Mr. Carlyle, the Professor of Arabic in the University of Cambridge; and the results of his

labours were communicated in a series of letters to the bishop, who afterwards placed them in Mr. Walpole's hands, for publication in the *Memoirs on Turkey*. The attention of the professor was especially directed to the Library of the Seraglio; and we give our readers a short detail of his proceedings, in endeavouring to examine that repository, both because they are interesting in themselves, and because they afford an illustration of the obstacles which oppose all such undertakings in a land like Turkey.

As soon after Mr. Carlyle's arrival in Constantinople as circumstances permitted, an application was made with all the weight of the British Embassy to Youssuf Aga, who possessed extensive influence over the reigning Sultan, through the agency of the Valida, or Empress mother, for permission to examine the Library of the Seraglio. The request was favourably received; not only did Youssuf regard it as one which ought to be granted on account of the friendship subsisting between his country and England, but he even thought (strangely enough for a Turk,) that the inspection might be productive of some advantages to literature in general. A promise was immediately given that an inquiry should be set on foot; and subsequently, Youssuf declared "that he had made every investigation in his power, and had found that no collection whatever of Greek manuscripts remained at present in the Seraglio." A request was then preferred for permission to examine the repositories of Oriental books in the palace; and to this it was answered, "that there were two of these, one in the Treasury, the other in what is properly called the Library; that the former contained only copies of the Korán, different commentaries upon it, and treatises peculiar to the Mohammedan laws and religion, and as such could not be subjected to Mr. Carlyle's inspection, but that the

Library should be open to him, and a day should be fixed for his admission."

After the usual delays, permission was granted; and Mr. Carlyle was requested to attend on a particular morning at the house of Youssuf. The Professor attended by a Dragoman (interpreter belonging to the Embassy,) arrived about eight o'clock. "Youssuf was gone out to wait upon the Sultan," is the account which he gives in his letter to Bishop Tomline, "and we found his Kiaia (steward) ready to receive us; we were ushered into a room where that gentleman lodged, who, with five others of the principal officers or attendants belonging to the Aga, were still at dinner. We sat down upon a sofa beside them, and as soon as their repast was over, and they had finished their ablutions, the Kiaia gave us a letter to the Bostangee Bashi, (chief of the guard, and in fact, superintendent of the Seraglio.) Furnished with his passport, we rowed to the Kiosk, or Pavilion, where the Bostangee Bashi usually passes the day. He was engaged at the Porte, and we were shown into a small guard-chamber, in order to wait his return; a messenger, however, soon arrived to conduct us to him. Thus escorted, we were suffered to pass the guard and to enter the court, or rather, garden of the Seraglio. After waiting some time for intelligence respecting the Bostangee Bashi, his deputy arrived, read the letters we had brought, and as his principal was engaged in the Seraglio, took upon himself to send for the keeper of the library, and direct him to conduct us thither; we accordingly accompanied him and three Moulahs, to a mosque at a little distance, through which the entrance to the library lies." Passing through this mosque "without speaking, and upon tiptoe," as they were directed, the party reached

the outer door of the library, which was locked and had a seal fixed upon the lock; over it was a short Arabic inscription, containing the name and titles of Sultan Mustapha, who founded both the mosque and the library in the year 1767.

"The library," continues the letter, "is built in the form of a Greek cross; one of the arms serves as an anti-room, and the remaining three, together with the centre, constitute the library itself. You proceed through the anti-room by a door, over which is written in large Arabic characters, 'Enter in peace.' The library is small, for, from the extremity of one of the arms to the extremity of the opposite one, it does not measure twelve yards. Its appearance, however, is elegant and cheerful. The central part of the cross is covered with a dome, which is supported by four handsome marble pillars; the three arms, or recesses, that branch off from this, have each of them six windows, three above and as many below. So small an apartment cannot but be rendered extremely light by this great number of windows, and perhaps this effect is not a little increased by the gloom of the mosque, and the darkness of the anti-room which leads to it. The book-cases, four of which stand in each of the three recesses, are plain but neat. They are furnished with folding wire-work doors, secured with a padlock and the seal of the librarian. The books are laid upon their sides, one above another, with their ends outwards, and having their titles written upon the edges of the leaves."

Mr. Carlyle proceeded to take a rapid survey of the contents of this celebrated repository, but the jealousy of the Moulahs, who accompanied him, prevented him from making out a detailed catalogue of the separate articles. He found the whole number of manuscripts to be 1294; there were many Arabic,

some Persian, and some Turkish,—"but, alas," to use the Professor's pathetic exclamation, "not one volume in Greek, Hebrew, or Latin!" The subjects to which they related were various, but, of course, the prevailing class was theological. Of the Koran there were 17 manuscripts, and no less than 649 relating to the Mohammedan religion, or jurisprudence; on mystical subjects there were 47 treatises, and on philosophy 86; logic and philology numbered 343, and medicine 31; while the histories were 43, and the works of poetry and the belles lettres 79. "Such, my lord," adds the learned examiner, "is the famous Library of the Seraglio! respecting which so many falsehoods have been advanced; but I am now very clear, both from the manner in which it is secured, the declarations of the Turks, and the contradictory accounts of the Franks, it was never before subjected to the examination of a Christian."

During Mr. Carlyle's residence in Constantinople, he examined, besides the repository contained in the Seraglio, several other collections, omitting, indeed, no one within his reach "which was likely to contain any valuable manuscripts." The Library of the Patriarch of Jerusalem,—the largest of the empire,—was visited, and a catalogue taken of its contents, which comprised nothing remarkable; the libraries attached to the mosque of Santa Sophia, to the schools, mosques, and colleges of Dervises, and even to the monasteries which are established on the Prince's Islands, in the Sea of Marmora, were also inspected.

In these researches Mr. Carlyle was aided by Dr. Hunt; and their result is shortly summed up by the latter gentleman, in a declaration, that "in none of those vast collections is there a single classical fragment of a Greek or Latin author, either original or translated. The volumes were in Arabic,

Persian, or Turkish, and of all of them Mr. Carlyle took exact catalogues." We must tell our readers, however, that very competent judges have questioned the propriety of so decided an assertion, grounding their objection on the necessarily cursory, and, therefore, unsatisfactory nature of the examination which was made. "It was not possible," is the opinion expressed in the *Quarterly Review*, "for these gentlemen, without an examination of the books themselves, to ascertain that they contained no *translated* fragments of a classical author. We think it on the contrary very probable, that some of the Arabic manuscripts may contain portions of Aristotle or Galen, or of later Greek writers." The authority of the Rev. Mr. Renouard, a well-known Orientalist, who was chaplain to the British factory at Smyrna, tends to the same point. "It is not impossible," says that gentleman, "after all that has been said and done about these supposed relics of 'the Library of the Cæsars,' that some volumes may be still extant in the subterranean recesses of the Seraglio. The Turks allow the monuments of antiquity to fall to ruin, but they seldom destroy any thing; and Mr. Barthold, formerly one of the Dragomans at Constantinople, declared that an eminent Greek merchant assured him that he had seen books from the Library of the Palæologi* in one of the chambers of the Sultan's Treasury, when admitted for the purpose of ascertaining the value of various articles in gold and silver, which the government wished to send to the mint."

* The Palæologi were a noble race who ruled over the Greek empire for the last two hundred years of its existence, with some slight intervals.

EVERY man has something to do which he neglects; every man has faults to conquer which he delays to combat.—JOHNSON.

THE LARGE FLOWERING SENSITIVE PLANT.

(Mimosa grandiflora.)

This splendid shrub grows wild, both in the East and West Indies. It is frequently found in the mountains of Jamaica, and was introduced into our gardens in 1769, by Mr. Norman. It belongs to the same tribe as the common sensitive plant, but does not possess the power of closing its leaves at the approach of danger, in nearly so high a degree as its less-splendid companion. We must all have noticed the folding back of the leaves, and the rolling up of the flowers, of many well-known plants, in the evening, or at the approach of rain, and their subsequent expansion in the morning, or after the passing by of the shower. But the sensitive plants include within themselves a power of motion far exceeding this, and approaching, in appearance, the voluntary movements of an animal. The origin of this singular power has never yet been discovered, although numerous experiments have been made, to ascertain the fact. These experiments all tend to demonstrate the infinite variety of ways, in which the Creator of all things has furnished every object of his creation with the means of self-preservation.

We have already alluded to the periodical closing of the leaves of plants: the same motion takes place in the sensitive plants, but the wonderful fact in the history of the latter is, that this movement can be produced at any time; and by merely touching the leaves gently, they will instantly recoil, and fold themselves together, as if for self-protection; and at the same time, the small twig which sustains the

leaves, approaches the main stem. If the touch has been forcible, not only the twig supporting one series of leaves is affected, but the same effects take place in the compound leaf, on the opposite side of the stem, and this motion is sometimes communicated to the whole plant.

It is very difficult to touch the leaf of a healthy sensitive plant so lightly as not to make it close: after the leaves are closed, some time elapses before they regain their original position, and the duration of this interval depends on the time of day, the season of the year, and the more or less healthy state of the plant. It seems, however, that light is an agent necessary to the production of some of these movements.

In the month of August, a sensitive plant was carried in a pot from its usual situation, into a dark cave; the motion it received in carriage, caused it to close its leaves, and they did not open until four-and-twenty hours afterwards: by this time they had become moderately open, but were afterwards subject to no changes at night or morning, remaining three days and nights with their leaves in the same state. At the end of this time it was brought out again into the air, where the leaves recovered their natural periodical motions, shutting every night, and opening every morning, as naturally and strongly as ever: but although while in the cave, their periodical motions were suspended, they shrunk from the touch with almost as much power as when in the open air.

Although a sensitive plant is, as we have seen, easily affected by the slightest touch, and closes when subjected to a heavy fall of rain, it remains unmoved if only exposed to a gentle shower. If the leaves are touched with sufficient force, the branches are also affected, but it is possible, if the

experiment is carefully performed, to cause the branch to move towards the stem, the leaves still remaining in their original position with reference to each other; thus proving, that the power of motion belonging to each part of the plant is independent of that possessed by any other part.

The same species of irritability has also been noticed in many other plants; one instance occurs in the flower of the common barberry. The experiment was made on a bush in full flower (it was about one o'clock, the day was bright and warm, with very little wind,) and is thus related by Dr. Smith.

"The stamina of such of the flowers as were open were bent backwards to each petal, and sheltered themselves under their concave tips. No shaking of the branch appeared to have any effect upon them. With a very small bit of stick I gently touched the inside of one of the filaments, which instantly sprung from the petal with considerable force, striking its anthera against the stigma. I repeated the experiment a great number of times in each flower, touching one filament after another, until the tips of all six were brought together in the centre over the stigma.

"I took home with me three branches laden with flowers, and placed them in a jar of water, and in the evening tried the experiment on some of these flowers, then standing in my room, with the same success.

"This irritable power appears, however, to reside only in the inside of the filament, as when touched in any other part it remained unmoved."

THERE are few occasions in life in which we are more called upon to watch ourselves narrowly, and to resist the assaults of various temptations, than in conversation.—HANNAH MORE.

RURAL CHRONICLE.

April.

Departures.—For the north: — Frost, Esq. and suite amongst whom we noticed Messrs. Woodcock, Fieldfare, Redwing, &c. &c.

Arrivals.—Early in the month, Mr and Mrs. Swallow: family expected to follow soon. N.B. Mr. and Mrs. S. go out very little as yet.

The Messrs. Blackbird and Thrush have begun to give their annual concerts for the season. Their respective ladies "are at home."

The musical foreigner of distinction, the Signor Cuckoo, whose favourite cantatas are so repeatedly encored,—is said to be on the look-out for lodgings in the neighbourhood: strange stories are in circulation respecting a branch of the Sparrow family.

The Widow Nightingale, to her seat in Poplar Island.

The Miss Martins for the season.

Dr. and Mrs. Rook have made great progress in their new dwelling, which is built on the old site.

The Wren family, so famous in the annals of architecture, have lately designed some edifices, which show them to be as skilful as ever in that admirable art.

Court News. Gazette Extraordinary.

Yesterday, her Serene Highness, Queen Flora, held her first drawing-room this season; which was most numerously attended. The court opened soon after sun-rise, Mr. Skylark was in attendance to announce the company.

The Misses Daisy were the earliest visitors; after which arrivals were constant.

Messrs. Bugle, Broom, Lilac, Orchis, Periwinkle, Ranunculus, Stellaria, &c. &c., all richly and tastefully attired.

The numerous family of the Anemonies paid their devoirs early; these elegantes were variously habited,—some wore rich scarlet boddices, others purple and green train,—the Misses A., in robes of simple white and green, almost surpassed in beauty their more splendid relatives.

The Miss Violets, on their return to the country, introduced by the Ladies Primrose; the amiable and modest appearance of the former was much noticed, the costume

of each party was thought very becoming, and skilfully assorted to set off the charms of both.

The Miss Blue-Bells wore robes of azure tissue, and were much admired for the sylph-like elegance of their forms.

The beautiful Germander family, with their never-to-be-forgotten eyes of heavenly blue, attracted universal attention.

The arrival of the Rose family was anxiously expected.

The Miss Cowslips were presented: it has been the fashion to call them the "pretty rustics:" but they were most graciously received, and the delicate propriety of their dress and manners much admired.

The Lady Cardamines, costumes of the finest *linen*.

Mrs. Tulip, body and train of crimson and gold: this truly grand dress had a superb effect.

Messrs. Chestnut, Oak, Birch, Lime, &c. &c. sported new bright green liveries, of various shades.

Messrs. Blackthorn, Pear, Apple, &c. &c. crowded round their sovereign, eager to pay their dutiful homage: they made a magnificent show, in rich suits of white, red, and green.

The company were greatly delighted with a concert of vocal music from a large party of the best performers in the neighbourhood, consisting wholly of amateurs.

The Court broke up, having partaken of a few drops of a light and charming beverage; but not before the Widow Nightingale, (who had joined the performers of the morning,) had been entreated to favour the company with a song,—that well-bred lady instantly complied, and poured upon the ears of her delighted auditors one of her most heart-thrilling melodies.

BERNARD GILPIN.

We have occasionally wandered into foreign lands, in order to bring before the notice of our readers two most exemplary ministers of the Gospel, Oberlin and Neff In our own country, and in our church, we rejoice to know there have been many no less bright examples of ministerial zeal and fidelity. Nor, among them, is there one whose character can be contemplated with greater delight or edification,

than Bernard Gilpin. This excellent man was raised up by Divine Providence at a critical period of our long and arduous struggle with the church of Rome; and if, as a theologian, Gilpin cannot be ranked with some of the other fathers of our national church, we must render our most reverential homage to that combination of zeal, piety, and charity, which procured for him the distinguishing title of the Apostle of the North.

Bernard Gilpin was born of an ancient and honourable house at Kentmire, in Westmoreland, in 1517. At the age of sixteen, he was sent to Queen's College in Oxford, where he so much distinguished himself for his proficiency in learning, particularly in Greek and Hebrew (then rare accomplishments), that he was selected as one of the students to be placed on Wolsey's new and magnificent foundation of Christ Church. For some years, however, Gilpin continued an adherent to the faith of Rome. He even held a public disputation against Hooper, the reformer, and afterwards martyr, for the reformed doctrines; and, subsequently, was one of the persons selected to oppose Peter Martyr, when that great champion of Protestantism was sent by Cranmer, at the beginning of King Edward's reign, to occupy the chair of divinity at Oxford. But the very studies and researches which Gilpin instituted for the purpose of maintaining his cause, led him to doubt its strength; and, when he came to the contest, he acknowledged, with a candour and sincerity of mind peculiar to himself, that he could not support his argument. Still, such was his modesty and distrust of himself, that it was only by the most cautious and deliberate steps that he receded from the faith in which he had been reared; and it was not until he had employed some more years at the

university, in a patient investigation of truth, that he was induced to give the preference to the reformed principle. In 1552, when he was thirty-five years of age, he undertook the living of Norton; which, however, he very soon relinquished, having still, it seems, some lingering scruples on his mind which he wished to dissipate, by consulting certain eminent divines on the continent; and for this purpose he spent three years in the Netherlands and France.

At length, Gilpin returned to England a confirmed and decided Reformer; and it is remarkable that he returned at the very time when so many persons of his own religious principles were quitting the country to escape from the persecutions of Queen Mary. Gilpin, however, had a protector in his uncle, Cuthbert Tunstal, Bishop of Durham. This amiable prelate, although still an advocate for the Romish Church, maintained his principles with moderation; and, throughout the whole struggle between the two systems of religion, he stands most honourably distinguished from his brethren, the crafty Gardiner, and the ferocious Bonner. Neither, although well apprized of the religious opinions of his nephew, did he hesitate to confer upon him some pieces of preferment, and ultimately, the valuable and important benefice of Houghton-le-Spring, in the county of Durham.

If Gilpin was long in coming to a decision, he maintained his opinions, once formed, with a resolution that could not fail to render him obnoxious to the papal party. These men, after making several ineffectual attempts to ruin him with his uncle, proceeded with better hopes of succes, to denounce him before the tribunal of Bonner. Gilpin was not insensible of his danger. He even prepared (according to a practice not uncommon in that age) a garment, in which he might go decently to the stake, and put

it on every day until he was apprehended. In his way to London, he, however, chanced to break his leg; and before it could be set, the death of Queen Mary freed the persecuted Protestants from all danger or restraint.

The reputation which Gilpin had now acquired among the Reformers, procured for him, on the accession of Elizabeth, the offer of the Bishopric of Carlisle; but the mitre had no attractions for him, and, although the offer was twice pressed, it still was steadily and peremptorily rejected. A short time afterwards, he had another opportunity of proving how little he was ambitious of high stations, by refusing the proffered Provostship of Queen's College, in Oxford.

In fact, Houghton was to Gilpin what "dear Hodnet," in later times, became to Heber. It was the station exactly adapted to his disposition and taste, and where his history becomes especially interesting. The benefice was valuable, giving him a revenue of 400*l.* per annum,—a large sum in those days; but the parish was extensive, embracing not less than fourteen hamlets, and the inhabitants were benighted in ignorance and superstition. Gilpin addressed himself to the wants of his people; he was assiduous in preaching, and was instant, in season and out of season, in bringing before them the saving truths of the Gospel. He instructed in private as well as in public, condescending to the weak, bearing with the passionate, and consoling the afflicted. He interposed his authority to settle the differences of his parishioners, and, blessed by Divine Providence with ample means, he was almost boundless in his benefactions. The decayed houses on his benefice he repaired, and his own residence was made admirable for the variety and neatness of the build-

ings. He relieved the wants of the sick and poor, and both for his own parishioners and strangers, he kept an open table every Sunday, from Michaelmas to Easter. Even their beasts had such care taken of them, that it was humorously said, if a horse was turned loose in any part of the country, it would directly make its own way to the rector of Houghton's. At the same time, in dispensing his charities, he was always desirous to give no encouragement to idleness or imprudence; and, with a yet higher view, from the painful conviction of the want of learned men to preach the word of God, he founded, at his own cost, a grammar-school, building the house, allowing a maintenance for a master and usher, and boarding at a moderate rate, or gratuitously where need required, twenty-four youths, who received at his hands the blessings of a learned and pious education. At the University he continued to entertain ten scholars; and it was his practice, if he met with a poor boy who exhibited any marks of superior intelligence, to remove him at once into his seminary, and to charge himself with his maintenance and instruction.

Such was Bernard Gilpin in his parish; but it is a remarkable part of his history, that to these labours of a parochial minister he added those of a missionary. In that age, the limits of pastoral charges were less strictly defined than at present. The want of a sound and well-educated clergy occasionally procured for divines, of superior attainments, a license to preach wherever they might judge their services to be wanted; nor was there any part of England more in need of spiritual labourers than the mountainous parts of Durham and Northumberland.

This region was then quite wild and uncivilized. To the merchant and to the traveller it was impervious; and its close neighbourhood to the hostile

kingdom of Scotland, kept the inhabitants constantly in arms, and nourished the ferocious and predatory habits peculiarly characteristic of the Borderer. Moreover, the inaccessible character of the country had prevented the introduction of the reformed doctrines, and, with their chieftains, the people were still blindly attached to the ancient superstitions.

In this wild tract of country, Redesdale and Tynedale were considered to be pre-eminently savage; yet this was precisely the field to which Gilpin, availing himself of his general license for preaching, directed his steps. For several years, he made an annual progress through the parishes of this sequestered region; selecting for his visits, the winter season, when the greatest number of persons were likely to be collected together. He preached among them peace and good-will, and endeavoured, but without personal risk, to subdue their barbarous habits. On one occasion, two parties at deadly feud with each other, came armed into the church where Gilpin was officiating, and seemed about to proceed to actual hostilities, when the preacher, having obtained from them a promise to forbear whilst he remained in the pulpit, proceeded with his sermon, and spent the remaining time in reprobating their rude and bloody customs. Another time he saw a glove suspended over the altar in a church, in token of a general challenge from some person desperately enamoured of fighting. Finding the sexton afraid to remove the glove, Gilpin himself took it down with a long staff, and put it in his breast. When the people were assembled, he went into the pulpit; and before he concluded his sermon, took occasion to rebuke them severely for their inhuman challenges. "I hear," said he, "that one among you hath hanged up a glove, even in this sacred place, threatening

to fight any one who taketh it down. See, I have taken it down!" and pulling out the glove, he held it up to the congregation, and then showed them how unsuitable these savage practices were with the profession of Christianity, using such persuasions to mutual love as he thought would most affect them. It could not be supposed that such kindnesses, accompanied as they always were by a liberal distribution of alms, should fail to win the heart of these uncultivated people. Gilpin was esteemed a very prophet, and little less than adored among them; and a pleasant story is told, that his horses having once been stolen, when the thief (all Borderer as he was,) learned to whom they belonged, he brought them back with trembling, craving the pardon of Father Gilpin, and protesting his fears of immediate punishment from heaven, if he had done him any wrong.

Thus beloved and reverenced, Bernard Gilpin pursued his useful career. With advancing years he began to feel the infirmities of age, and he received a serious hurt by being beaten down by an infuriated ox, in the market-place of Durham. As his end approached, he expressed to his friends and parishioners the consolations that he derived from his faith and hope in Christ; and, at length, he fell asleep in the Lord, in great peace, in 1583, in the 66th year of his age.

His biographer, Carleton, Bishop of Chichester, who had been one of his scholars, concludes his life of his revered patron by saying, "He was careful to avoid not only all evil doing, but all suspicion thereof. He was accounted a saint in the judgment of his very enemies, if he ever had any such; and, at length, being full of faith unfeigned and good works, he was at the last put into his grave, as a heap of wheat in due time swept into the garner."

THE NATURAL AND CIVIL HISTORY OF CEYLON.

V. Of the Animals in Ceylon—Reptiles.

Of the animals known in this island, the principal is the elephant, which is found in large herds, and is an object of very profitable traffic. The Ceylon elephant is particularly valued, and always fetches a high price. The next most remarkable animal is the Elk, of which there is a species, I imagine, peculiar to this island. It differs from the common elk, in having a short thick mane, that covers the neck and throat. When full-grown, it measures about five feet from the extremity of the fore-hoof to the top of the shoulder. Its colour is dark-brown, except on the neck, belly, and hind part of the thighs, where it approaches nearly to black. The habits of this animal are gregarious, though it is occasionally met with alone in the woods. Its appearance betokens gentleness, and even timidity, but it is, nevertheless, very tenacious of a stranger's approach; and at a particular season it is extremely dangerous to go near it. It is very difficult to tame, for though playful and harmless while young, as soon as it begins to have a consciousness of its power, it becomes wild, and so impatient of restraint, that it cannot be reconciled even to its keeper. The female precisely resembles the male, except that it is smaller, and has no horns.

Buffaloes are common in Ceylon, and the white buffalo is sometimes found; but these are very rare, and have a sickly appearance. It is therefore probable, as many of the natives suppose, that the whiteness is occasioned by some disorder, similar to that kind of leprosy in the blacks which turns their skin to a dull sickly white.

The Snakes of Ceylon.

It has been supposed that the island of Ceylon is particularly infested with venomous snakes; I shall, therefore, confine myself chiefly to an account of the snakes found there, by which it will be seen how far that idea is well founded. The Pimberah, as it is called by the natives, and the Rock-snake by Europeans, is the largest of the serpent-tribe known in Ceylon. It does not belong to the Boa species, but to the new genus *Python* of Cuvier. In size it never exceeds thirty feet, and seldom attains to this

length. It has a couple of sharp horny spurs, a short distance from the extremity of its tail, which are useful to the creature in climbing trees, and in holding fast its prey. The colour of this snake is generally a mixture of brown and yellow; the back and sides are strongly and rather handsomely marked with irregular patches of dark brown, with very dark margins. The jaws are powerful, and capable of great dilatation: and they are armed with large, strong, sharp teeth, reclining backward. As the muscular strength of this snake is immense, and its activity and courage considerable, it may be credited that it will occasionally attack man. There can be no doubt that it overpowers deer, and swallows them entire*.

"The body of this creature," says Knox, "is as big as a man's middle, and the length proportionable. It is not swift, but by subtilty catches its prey. He lies in the path where the deer use to pass, and as they go, he claps hold of them by a kind of peg that grows on his tail, with which he strikes them. He will swallow a roebuck whole, horns and all, so that it happens sometimes the horns run through his belly, and kill him. A stag was caught by one of these Pimberahs, which seized him by the buttock, and held him so fast, that he could not get away, but ran a few steps this way and that way. An Indian seeing the stag run thus, supposed him in a snare, and having a gun, shot him, at which he gave so strong a jerk, that it pulled the serpent's head off, while his tail was encompassing a tree, to hold the stag the better."

The first among the poisonous snakes known in Ceylon is the Cobra de Capello of the Portuguese, the Hooded-snake of the English, the Noya of the Cingalese, and the Coluber naja of Linnæus. Its length is from three to six feet. It varies much in colour, from light to dark brown. The natives in general rather venerate this snake than dread it. They conceive that it belongs to another world, and that when it appears in this, it comes merely as a visiter. They imagine that it possesses great power, being somewhat akin to the gods, and greatly superior to man. In consequence of this notion, they superstitiously refrain from killing it, and always avoid it, if possible. Even should they happen to find one in their house, they will not destroy it, but put it into a bag, and throw it into the water.

* See Davy's *Account of the Interior of Ceylon*.

The bite of the Cobra de Capello is not so immediately fatal as is commonly supposed; fowls have been known to live two days after being bitten, though they frequently die within half-an-hour. Upon dissection, it has been found that the lungs are the principal seat of diseased action. This is the snake which the jugglers exhibit, and it is generally imagined to be perfectly harmless when exhibited, in consequence of its fangs having been extracted by these adepts in the art of legerdemain; but this is a mistake. The fangs are not extracted, and the creature is presented to the spectator with all its powers of mischief unimpaired.

The bite of a snake of this species shown by any of these itinerant conjurors would as certainly prove fatal as from one encountered in the jungle. This will, perhaps, appear strange to those who have heard of these reptiles being constantly shown in the houses of the curious, and more especially when they are told that this snake is frequently permitted to put its head against the cheeks of the children of those who show them. The dexterity of the jugglers in managing these dangerous reptiles is truly extraordinary. They easily excite them to the most desperate rage, and by a certain circular motion of the arms appease them as readily; then, without the least hesitation, they will take them in their hands, coil them round their necks, and put their fingers to their mouths, even while their jaws are furnished with deadly venom, and the slightest puncture from their fangs would most probably produce death.

The power which these people exercise over this species of venomous snake, remains no longer a mystery, when its habits are known. It is a remarkable peculiarity in the Cobra de Capello, and I believe in most poisonous snakes of this class, that they have an extreme reluctance to put into operation the deadly power with which they are endowed. The Cobra never bites unless excited by actual injury, or extreme provocation, and even then, before it darts upon its aggressor, it always gives him timely notice of his danger not to be mistaken. It dilates the crest upon its neck, which is a large flexible membrane, having on the upper surface two black circular spots, like a pair of spectacles, waves its head to and fro with a gentle undulatory motion, the eye sparkling with intense lustre, and commences a hiss so loud, as to be heard at a con-

siderable distance: so that the juggler has always warning of his danger when it is perilous to approach his captive. The snake never bites while the hood is closed, and as long as this is not erected, it may be approached and handled with impunity. Even when the hood is spread, while the creature continues silent there is no danger. Its fearful hiss is at once the signal of aggression and of peril. Though the cobra is so deadly when under excitement, it is, nevertheless, astonishing to see how readily it is appeased, even in the highest state of exasperation, and this merely by the droning music with which its exhibitors seem to charm it. It appears to be fascinated by the discordant sounds that issue from their pipes and tomtoms*.

The snake called Carawilla, by the Cingalese, is the most common of the poisonous kind in Ceylon, but its bite is scarcely more fatal than that of the viper in this country. Its average length is about a foot. Its back is of a dull reddish-brown colour, its belly nearly silver-white, and grayish towards the tail. On each side, between the ridge of the back and the boundary-lines between the back and the belly, there are two rows of black velvety spots; and of these there are three in the tail. The head is nearly triangular, and compressed: it is of a darker colour than the body, and is free from spots. Its jaws are very dilateable. Its fang teeth are long, slender, and sharp. It lies coiled up, its head projecting nearly at right angles to its body. When provoked, it hisses, darts its head with great rapidity at the irritating object, and wounds almost to a certainty. It is active, and when frightened and anxious to escape, moves with great rapidity. From several experiments made by Dr. Davy, it appears that the bite of this snake is not usually fatal, even to small animals. The symptoms are pretty uniform, and quite different from those produced by the poison of the Hooded-snake; the diseased action being more local, and much more inflammatory, commencing in the part bitten, spreading progressively, losing its force as it extends, and, probably, never proving fatal, except it happen to reach a vital organ.

The snake called by the Cingalese Ticpolonga, is by no means common. It is considered, and no doubt justly, the most dangerous snake on this island; though, if we take its scarcity into the account, it would really be the least

* See the *Oriental Annual* for 1835.

dangerous, as it is much more rarely met with than those already mentioned. The natives have great dread of it. When full-grown, it is from four to five feet long, and very thick in proportion to its length. It has not the gracefully tapering symmetry of the Cobra de Capello, neither is it of so brilliant a hue. The head is small, and nearly triangular; its tail is tapering, round and short, something like that of the common English viper. The colour of its upper surface, is a dark, dull, brownish-gray; of its under surface, light-yellow. Its belly is not spotted, but its back is marked very regularly. In some specimens the mark is oval, in some they are more pointed, having the form of a trapezoid; in some they are surrounded with a white margin; in others, the spots are lightest in the middle. This snake is rather indolent and inactive. It is very averse to exercise the deadly powers with which Providence has gifted it. It lies coiled up like the Carawilla, and also, like that snake, when irritated much, darts suddenly forward, and strikes with a precision and activity that seldom fails of producing the most fatal consequences. From several experiments which Dr. Davy made with this snake, on a dog and fowls, he found that its poison was much more suddenly fatal, than that of any other snake in India. The fowls that were bitten, all died within two minutes, and some within one. A rat expired within a few seconds after it was bitten, the poison causing convulsions, and almost instant death.

After a very minute inquiry into the matter, and confirming his researches by experiments, Dr. Davy has come to the conclusion, that there are only two species of snake in Ceylon, the bite of which is likely to prove fatal to man, the Hooded-snake and the Tiepolonga, and that the danger from the latter, is very much greater than that from the former*. He, moreover, seems to think, that the bite of the Cobra de Capello is much less fatal than is generally represented; for he states, that he has seen several men who had recovered from the bite of that snake, and that he had heard of two or three only to whom it had proved fatal. If this be the case, the poison of the Ceylon snakes must be of a less virulent kind than that of similar snakes on the peninsula, for I have known two instances, in which death has ensued within a few hours after the persons

* See Dr. Davy's *Account of the Interior of Ceylon*, and Dr. Russell on *Indian Serpents*.

were bitten. One of the unfortunate men was a Sepoy, the other a grass-cutter.

There is a snake, sometimes, but very rarely, found in Ceylon, which appears to be the same mentioned by Dr. Russell in his account of Indian serpents, under the name of Bodroo Pam. The Cingalese have no name for it, which is sufficiently accounted for, by its being so seldom seen. It is little more than two feet long, its head is large, and shaped like a heart, but irregularly. Its neck is small, and its body thin; its sides are compressed, and the tail is rather abrupt and tapering, like that of the Ticpolonga. Between the eye and nostril it has two large cavities, one on each side, the diameter of which rather exceeds one-tenth of an inch. Its lower surface is yellow, variegated with green; its upper, bright apple-green. This colour is confined to the scales; the cutis beneath is black, consequently, where the scales are very close, as they are in patches along the back, black is excluded: and where they do not overlap, the green appears to be shaded with black. A line of black scales may be mentioned, as occurring above the upper jaw, and a few of the same colour appear along the back.

Reptiles.

It will appear from this, that the vulgar notion of Ceylon abounding with venomous reptiles, is quite erroneous. Scorpions, centipedes, and two or three species of spiders, are the only other poisonous creatures known in this island. Dr. Davy considers the sting of the scorpion little more severe than that of a wasp or a bee, but I think this is underrating its severity, as I knew of its proving fatal in one instance to a European artilleryman, at Poonah, who was stung in the finger by a large black scorpion. The inflammation was so great, that he died within twenty-four hours. There might have been some inflammatory tendency in the man's constitution, which was excited by the poison; but I have known several in which the suffering has been intense, and for a considerable period.

It is astonishing, that where snakes and other poisonous reptiles are supposed to abound, not only in Ceylon, but in India generally, so few accidents should occur, and indeed, their infrequency is a strong presumptive proof that they are much less abundant than is commonly supposed.

THE USEFUL ARTS. No. VII.

CRUCIFEROUS PLANTS.—UMBELLIFEROUS PLANTS.—SALAD HERBS.—PLANTS USED FOR SEASONING AND PICKLING.—CONDIMENTS.—SUGAR.

WE now come to the order of CRUCIFEROUS plants, which do not afford the nutritive principles starch, or sugar, or farina, but yet are very essential articles of food. We are ignorant of the wonderful organic powers of digestion and assimilation, but we know that the human constitution requires a certain quantity of herbaceous vegetable food to keep it in perfect health, and that the order of plants in question supplies this in the most efficient form. It may be added that the cruciferous plants differ from most others in containing more *azote*, an essential animal principle, and in being without a single exception, innocent, if not wholesome.

The CABBAGE, and its endless varieties of BROCOLI, CAULIFLOWER, SPROUTS, &c.; the TURNIP, SEA CALE, RADISH, CRESS, MUSTARD, &c., belong to this order.

The CARROT, the Parsnep, and Celery, are the principal and best known vegetables belonging to an order of plants which possess the most opposite qualities. This apparent contradiction is easily explained; the *Umbelliferous* plants are always injurious, and often most fatally poisonous, but the peculiar vegetable principles to which they owe these formidable qualities, are only elaborated in the *leaves*, in consequence of the chemical changes which are effected in the sap by the agency of air and light. The *proper juices*, or this modified sap, are transmitted to the *bark* and *stem;* it is in the leaves or stem therefore that the noxious principles abound, while the fruit or seed is comparatively free from them.

The vegetable principles are, generally, extremely volatile, easily dissipated by heat; hence cooking by fire renders many parts of plants innocent, if not beneficial, by dispersing the dangerous juices, or oils, while the nutritive matter they may contain remains unaffected by the process. The *roots* of the Carrot and Parsnep abound with sugar, and contain but little, if any, of the poisonous principles which reside in the stem and leaves, and what there is, is probably removed by the heat in boiling. These

roots are consequently two of the most nutritious vegetables we possess.

Celery in its wild state is poisonous, but as it is cultivated in this country, the stem and leaves are kept from the air and light, consequently the poisonous principles are not fully elaborated, and the plant is rendered as innocent as it is grateful by its coolness and juiciness. All *raw* vegetable matter, however, is comparatively indigestible, and celery is not exempt from this property, so that it is only when boiled in soups, &c., that it is rendered completely innoxious.

Spinach is the principal vegetable cultivated, of an order which would supply an abundant variety of wholesome herbaceous matter; and in some counties of our own island, as well as in many places abroad, where people are less fastidious, or are compelled to avail themselves of every resource for food; several species of the *Chenopodeæ* are so employed. The wild Goose-Foot, Good King Harry, Orach, &c. may be cited as examples. The *Beet-Root*, belonging to this order, is remarkable for the quantity of sugar which it contains, and to which it owes its nutritive quality. It was extensively cultivated in France during the commencement of the present century, for the purpose of obtaining sugar from it, at the time when the war existing between that country and our own, deprived the French and their allies of the supply of sugar from the West India Islands, all of which were in our possession, either as colonies or conquests. On the restoration of peace, when a more humane and enlightened policy restored a free interchange of the natural productions of remote countries, France, like all the rest of Europe, could be more cheaply supplied with foreign sugar, and the cultivation of Beet for that purpose has gradually declined, though it is far from being given up.

In Britain, Beet is but little used, and that little only in *salads*, as a *preserve*, or for making wine. The cause of this neglect of so delicate and wholesome a root is unaccountable, since, being an indigenous plant, it is perfectly hardy, and of the easiest culture.

The *Mangel-Wurzel* is a variety of Beet, cultivated in Britain only as food for cattle.

Of all vegetable products there is none the taste for

which is more general than for the *Alliaceous* order, containing the *Onion, Garlic, Shalot, Leek,* &c. These plants are bulbous, and it is the bulb that is eaten. They owe their peculiar pungent and stimulating flavour to a white volatile oil, and they contain a good deal of phosphoric acid. Of the Onion there are innumerable varieties, which have been produced in consequence of the early cultivation of the plant, and of the difference of soil and climate in which it has been raised: those producing the largest bulbs are the mildest in flavour. That of the Garlic is so powerful as to admit of its being employed only as a condiment, and in small quantities; and, indeed, the strong and disgusting odour which they impart to the breath, have caused them all to be almost banished from the tables of the upper classes, although they are eminently wholesome.

Salad Herbs and Vegetables used in their Raw State, or at least uncooked by heat.

In this country the principal *salad* vegetables are the *lettuce* and *endive*, the former being properly a spring or summer, and the other an autumnal or winter plant. Both belong to an extensive order called *composite*, of which the common *Leontodon*, Thistle, and Daisy may be taken as types of the three natural sections into which the order is divided. There are several varieties of the Lettuce: of the two principal one is probably an indigenous plant *(Lactuca virosa,)* improved by cultivation; the other derives its name from having been brought originally from the island of Cos, and is the one most preferred for salads. These plants, the last named especially, contain a good deal of the narcotic principle, which gives to opium its peculiar properties: accordingly lettuce acts as a soporific, but does not appear to produce any deleterious effects on the constitution.

Besides these two plants, Beet-Root, Celery, Chives, Leeks, Onions, Cress, Mustard, Leontodon, Lamb's-Lettuce, Scurvy-Grass, Tarragon, Chervil, Burnet, and Sorrel, are used in salads, and many more might be added to the list. The term *salad* is applied to a dish of two or several these plants, cut up into a *dressing* of olive-oil, vinegar, stard, &c. mingled to form a smooth liquid of the con

sistence of cream; and it is probable that the stimulating, nutritive, or antiseptic properties of this condiment, counterbalance any injurious effects which might arise from the mass of raw vegetable matter taken into the stomach; however this may be, it is certain that persons, *in health*, feel a craving for salad, and may indulge in the enjoyment of it to a great extent with perfect impunity, if not with positive benefit.

The Water-Cress (*Nasturtium officinale*) and the Radish (*Raphanus sativus*) are the only plants always eaten without any addition whatever, at least in this country. Both belong to the order *Cruciferæ*, which has been already mentioned as being extremely wholesome, if not nutritive.

The Cucumber is a *fruit*, and does not fall within this division of our subject.

Herbs, or Plants used for Seasoning.

Most of these belong to an order of plants remarkable for abounding in a variety of volatile oils, to which they owe their aromatic perfume and flavour, which rather resides in their stalks and leaves, than in their flowers. We can here only enumerate their names, Thyme, Mint, Sage, Marjoram, Clary, Savory, and Basil. Lavender, which belongs to the same order is not used to *eat* in any form; *Tansy*, Rue, Tarragon, and *Rosemary* are composite plants, as is also Chamomile.

Parsley and *Fennel* are umbelliferous plants, and afford an exception to the usual poisonous quality of the leaves of that order. Perhaps they are only innocent when eaten young, as the former always is, before the flowers appear, it being a biennial, in the proper sense of the term; that is, it flowers the second year, ripens its seed and dies. Fennel is a perennial, and is little used.

Horse-radish (*Cochlearia armoracia*), an indigenous plant of the Cruciferous order, extremely prolific; the root is highly pungent, and more wholesome than most other strongly stimulating vegetable products.

There is a class of plants occasionally used for seasoning that must not be omitted: they all belong to the division of the vegetable kingdom containing those plants which do not flower, and differ as much in their appearance and forms, as they do in their physiological characters. The

best that can be said of them as food is, that in small quantities they *may* be innocent. The Champignon, *(Agaricus pratensis,)* is a small species of Mushroom, *(Agaricus campestris,)* found on pastures and hills in the morning, especially in Autumn; but large quantities are raised artificially in frames, on old dung or tan, in which pieces of mushroom *spawn* have been mingled. The spawn being nothing more than portions of a similar bed, which has produced the plants in abundance. The *Morel, (Phallus esculentus,)* differs from the mushroom in being a hollow, light, spherical mass, supported by a stem; they grow in damp woods and pastures, chiefly in May and June; it is but little used in Britain though indigenous here. The Truffle, *(Tuber cibarium,)* is a species of fungus that grows underground in woods in many countries; in France they are found by dogs, which are trained to this employment; like the Morel it is only used in a few dishes. The principal use of mushrooms is in the making of catsup. On the Continent many species are eaten which are disregarded by us.

Plants used for Pickles.

Pickling is the term used to express the mode of preserving animal or vegetable substances from the putrefactive fermentation, or from decomposition, by immersion in vinegar. When the same effect is produced by impregnating the food with salt, the process is also thence called *salting*. The significant word *preserving* is, commonly, applied to the preparation of fruit with sugar, which is likewise a most powerful antiseptic.

In treating of animal food we shall recur to the process of pickling and salting.

The noun *Pickles*, has been appropriated to express the preparation of certain vegetable products in vinegar, the flavour of which is heightened and improved by the addition of stimulating spices. Almost any plant which is eatable might be made into a pickle, and the number that are so treated is very great. The following are the principal in use in our country.

The *leaves* of a red or a white species of cabbage, the Samphire, *(Crithmum maritimum,)* an umbelliferous plant, growing on cliffs on the sea-shore; the *flower-buds* of the

Cauliflower, the *leaf-buds* or *bulbs* of the Onion, Garlic, Shalot, &c.; the *fruit* of the Capsicum, a genus of which there are several species thus used—in some the fruit is a green, in others a scarlet oblong or roundish capsule, containing numberless small seeds, of an intensely pungent taste; the Love-apple *(Solanum lycopersicum)* is of the same *genus* as the common potato, a tender annual, originally from South America; the *Nasturtium (Tropæolum majus)*; the *Gerkin*, *Cucumber*, *Melon*, and *Pumpkin*, fruits of species of *Cucumis*, trailing tender plants of the same order as our *wild briony*, which is highly poisonous: the *Caper (Capparis spinosa)*, a native of Sicily: the radish and the French bean. But the finest and most highly-prized of all fruits for pickling, is the Mango *(Mangifera indica)*. This tree is a native of India and South America, bearing narrow leaves, small white blossoms, producing a fruit the size of a goose's egg, but variable in different species. As a fruit, in the common acceptation of the word, it ranks as the first, but as it will not keep, its merits are only known to Orientalists.

The vegetable or vegetables to be pickled should be selected free from injuries, and of course clean; they should be dried in a cloth, cut in pieces, and laid in salt and water for two days, or more, to imbibe as much of the salt as they can. The vinegar, which should be the strongest and purest to be got, is generally boiled, both to evaporate any water which may dilute it, as well as to extract the flavour from the spice, which is put into it for that object. The spice is generally bird and long-pepper, cloves, mace, allspice, and ginger in abundance. The hot vinegar, when it has been sufficiently boiled, is poured over the vegetables and left till cold: it is then strained off again by means of a sieve or colander, and boiled again, and this process is repeated even a third time. Finally, it is poured hot on the vegetables, which are put into stone-earthenware jars, and these should be filled as nearly full as is convenient, for the purpose of excluding the air as much as possible; which object is furthered, by immediately tying a piece of bladder over the mouth of the jar, the air being thus inclosed in a rarefied state, owing to the heat, a smaller volume of it occupies the empty space than would otherwise be the case.

All pickle should be kept for some months at least before

it is used, and the flavour of most improves in proportion to the time it is kept.

The principal Vegetable Substances serving for Condiments, &c.

Sugar.

It has been already mentioned that the *saccharine* is the most generally diffused of all vegetable principles, but the plant in which it most abounds, or from which it is chiefly extracted in its separate state, is the Sugar-cane the *Saccharum officinarum.*

This plant belongs to the order of Grasses; there are several varieties, varying in height from ten to twenty feet, and in the arrangement of the knots in the stems. It is stated to have been originally brought westward, from China; till, soon after the discovery of America, it was transported thither, and spread so rapidly, and thrives so well there, that at present that Continent, and especially the West Indian Islands, supply the greatest part of the civilized world with this necessary. The juice is expressed from the stem by crushing between large rollers in a mill, and is collected in a cistern, from which it must be immediately transferred to the boilers, for otherwise, fermentation would spoil it, this action often commencing in ten or twenty minutes, owing to the warmth of the climate, and the abundance of sugar in the fluid. A certain proportion of lime, or of lime-water, is added to the juice, in order to neutralize any acid which it may contain. The lime also appears to act as a *clarifier*, for it causes much feculent matter to form and float on the top of the liquid before it begins to boil, which matter is carefully skimmed off; the juice is then boiled as rapidly as possible for the purpose of evaporating the superfluous water, and thus accelerating the crystallization of the sugar, which takes place on cooling, the boiled syrup being removed to shallow pans for that purpose.

When the mass in the coolers has *granulated*, or imperfectly crystallized, it is put into hogsheads, which have one or more holes in the bottoms, to allow the superfluous fluid, or the *molasses* to drain off; after this is sufficiently effected, the sugar is ready to be exported, and is called *brown*, or

raw, or *muscovado sugar*; *clayed sugar* is prepared by putting the boiled juice, when brought, by that process, to a proper consistence, into conical pots, the apex being downwards, and having a hole there, through which the molasses may drain. After a time, a coat of clay, mingled in water till it becomes fluid, is laid on the surface of the sugar, the water filters through the porous mass beneath, and carries with it a large proportion of the impurites contained in the sugar.

Loaf sugar, or the hard white sugar used for domestic purposes, is procured from raw sugar by *refining*, a process differing in no respect in point of principle from that to which the sugar has already been subjected, in order to obtain it from the juice of the cane; only that each step is repeated till all foreign matter is removed. To assist in this object, bullock's blood is mixed with the lime-water in which the raw sugar is re-dissolved; the albumen contained in this animal fluid coagulates, when heat is applied to boil the liquid, and materially assists in clarifying the mass. In some refineries, ivory-black, or animal-charcoal, is added to the boiled juice, to aid in rendering it more transparent and purer. When sufficiently clarified, the sugar is again put into conical forms and *clayed*, as before described. The sugar-loaves are finally dried in a stove, and packed in strong paper for sale.

The delicate part of this process consists in removing the boiled juice precisely at the right time, for the heat, if continued too long, would re-convert the mass into molasses, or would burn it, and so spoil the taste. Steam is now applied as the heating power, because it is more easily regulated than ordinary fires.

In the United States of America, a large proportion of the sugar consumed is prepared from the descending sap, or proper juices of the Sugar Maple, (*Acer saccharinum* and *Acer nigrum*.) The trees are tapped at the proper season by a cut being made through the bark, and the juice runs into a vessel placed to receive it. The subsequent processes do not differ greatly from those above described.

CONVENT IN THE ISLE OF MURANO, VENICE.

It may hardly be necessary to tell our readers, that the famous city of Venice is built on a cluster of small islands, or rather shoals, in the midst of a shallow muddy estuary, called the *Lagoon*, which intervenes between the open sea and the dry land, at the head of the Adriatic. Besides the islands which the city, strictly so called, occupies, there are several smaller ones, which were formerly well inhabited, and some of which even now possess a rather thick population.

To the north-east of the city is the town of Murano; a sort of miniature Venice, being built on several smaller islands in the Lagoon, and intersected by a number of canals. In former times, it had a separate Podestà (or governor) to itself, and enjoyed the privilege of coining money; fifty years ago it had 7000 inhabitants, it is now said to have only 4000. It used to possess four parish-churches, six monasteries, one convent of regulars, one oratory or private chapel, and two colleges for the education of youth. The churches are not very remarkable for their architecture, but like many others in Venice, they are curious for the interesting specimens of mosaic work which they present in their interior.

Murano is chiefly remarkable for its manufactory of glass, which used in former times to be very much celebrated. "I passed over," says the celebrated John Evelyn, "to Murano, famous for the best glasses of the world, where having viewed their furnaces and seene their work, I made a collection of divers curiosities and glasses which I sent for England by long sea. 'Tis the white flints which they have from Pavia, which they pound and sift

exceedingly small, and mix with ashes made of a sea-weede brought out of Syria, and a white sand, that causes this manufacture to excell. The Towne is a *Podestaria* by itselfe, at some miles distant on the sea from Venice, and like it built upon several small islands. In this place are excellent oysters, small and well tasted like our Colchester, and they were the first as I remember that I ever could eate, for I had naturally an aversion to them." At the present day, the glass-manufacture of Murano possesses a sort of local pre-eminence; it gives employment to a considerable portion of the population of the city.

Among the other islands which are to be found in the neighbourhood, one of the most interesting among the islands belonging to Venice, is that which bears the name of *Torcello*, or *Torzelo*. In the days of the old Venetian Republic, it formed with Burano, and some smaller isles, a separate district, with a Podestà, or governor of its own; it was also the seat of a bishopric, the jurisdiction of which extended over Murano. The city of Torcello was originally founded by the inhabitants of Altino, when they fled from the approach of Attila, in the middle of the fifth century; and two hundred years afterwards it afforded the same citizens a similar shelter against the attack of the Lombards. In the earlier ages of the Republic, it was a very flourishing place; but its prosperity would seem to have flown for many years. "Of the ancient greatness of this city," says an Italian writer in the year 1787, "and of its wealth, from which it was called, by the Emperor Constantine, *Porphyrogenitus*, 'the great emporium, Torcello,' there scarcely remain the smallest vestiges; it is become one of the most deserted islands in the Venetian Lagoon." Its present condition is well described in the following passage from the pen of Mr. Rose, who

viewed it as one of those objects of curiosity, deriving their interest from association or some other less-definable cause, which deserve the notice of the traveller, though not registered amongst the wonders of a place.

"Having visited the manufactories of Murano and Burano," says that gentleman, "and witnessed such a scene of promiscuous misery, as I feel no temptation to describe, I prolonged my voyage, and landed on the nearly desert island of *Torzelo*, about six miles from Venice. This spot, once the summer resort of the Venetian patricians, and covered with their villas and gardens, presented a very different character of desolation. My eyes were neither pained by the visible progress of ruin, nor disgusted by the meanness of the instrument which had wrought it. Time was here the great destroyer, and moreover, time had done his work.

"I was favoured by one of those delicious days of sunshine, common even in a Lombard winter, which in some degree mitigated the melancholy of the prospect, and enabled me to saunter and view without inconvenience, all the circumstances of the scene. Amidst the vestiges of departed grandeur were left some poor and scattered houses, and a church, the restoration of which dates, I believe, from the eleventh century. A broken column marks the centre of what had been the piazza (or place), and from which had once waved the standard of St. Mark. Amidst these remains glided a few human beings, the miserable tenants of the place. There was nothing striking in the architecture, nothing picturesque in the landscape, but the whole made an impression upon me which no other ruins ever produced. Whilst I was musing upon the prospect before me, a clock from a half-ruined tower

tolled twenty. Time only had suffered no change, together with the monuments he had overthrown. He spoke an antiquated language, hardly intelligible to the generation of the day."

The church here mentioned, was the Cathedral of the bishopric of Torcello. According to the Italian writer before quoted, it was built in the year 1008, by the then bishop Urso Urseolo, son of the famous Doge, Pietro Urseolo the Second, under whose rule the power of the Republic had so much increased, and who was the first to add to the title of Duke of Venice, that of Duke of Dalmatia. "Every where," says our author, in the description of the church as it existed in the last century, "is seen the utmost splendour and magnificence. Two rows of columns, fashioned of Greek marble, divide the body of the edifice into three portions; its pavement is mosaic, and the walls also are decorated in the same manner." Mr. Rose says, that the architecture of the church is not very striking, yet the edifice possesses some interesting features. "Its stone-shutters, carrying one's ideas back to days of violence, are, as far as my observation goes, a singular remnant of such an age; and some very curious mosaics in the inside, may vie in beauty and in antiquity with those of St. Mark."

A Duke of Brunswick was once accosted in Venice, by a boy who solicited charity. The duke told him that he had no small change; on which the boy offered to get him change for a piece of gold. The duke thought this a ridiculous circumstance, and to rid himself of the applicant, he gave him a ducat, in the certainty that the young beggar would keep it. After a very short time, the lad returned, to his great surprise, with the full change for his ducat, in the small coin of Venice. The duke, struck with his honesty, not only gave him the gold, but undertook to provide for him, and afterwards promoted him to honourable employment.

THE ATMOSPHERE.

Any substance immersed in a heavy fluid, in addition to those *horizontal* pressures which, acting equally in opposite directions, produce no tendency to horizontal motion, sustains also certain *vertical* pressures, whose effects not being thus neutralized, produce in it a tendency to upward motion, equal to the weight of fluid it displaces.

Our bodies then being immersed in the air, sustain, each, an upward pressure equal to the weight of air which they displace. Why then, it may be said, are we not conscious of that upward pressure? The answer is obvious; Because the weight of the body *exceeds* the weight of the air it displaces. The downward pressure, exceeds the upward pressure; and we are, therefore, only conscious of weight.

This, however, is not only true of the aggregate of the upward pressures upon different parts of the body, but each in particular. If, for instance, we imagine the body to be divided into any number of slender vertical columns, then the *upward* pressure upon that portion of its surface which forms the base of any one of these columns will equal the weight of a column of air of precisely the same dimensions; the downward pressure of the column will equal its *weight*, and, therefore, will exceed the upward pressure; we shall thus be unconscious of any upward pressure upon the surface spoken of; and the same is true of every other portion of the surface of the body.

If we could by any means lighten the substance of our bodies, so as to render them lighter than the air they displace we should immediately ascend and float in the air. This seems to be in a great measure the case with birds; their bodies are exceedingly

light, probably not much heavier than the air they displace, and they have also probably the power of rendering them still lighter in comparison with it by distending the cavity of the chest, or some other hollow portions of the body, without, at the same time, admitting any portion of the external air*.

Birds stand in this respect pretty nearly in the same relation to the air, that fishes do to the water. Fishes have the power to expand certain portions of their bodies, so as to cause the quantity of water they displace to exceed their own weights, or be less than them, according as they wish to rise to the surface of the water, or to sink to any required depth beneath. Some of them would seem to have the power of carrying this expansion still further, so as to pass from the water into the air, and displace a quantity thereof, weighing nearly the same with themselves; these are called Flying-fish. In the same manner, there are certain birds which would seem to be able so to contract their dimensions, as to sink in water to any depth they may wish.

We may easily construct bodies lighter than the air they displace; the upward pressure of the air upon such bodies will then exceed their weight, and they will ascend in it.

It is upon this principle that balloons are made. Certain fluids may be artificially produced which are greatly lighter than the air they displace. These fluids are of the kind called gases, or elastic fluids. If a light vessel, capable of containing one of these fluids —as, for instance, a bag of glazed paper, or of thin silk—be filled with that fluid, and then left to itself it will immediately begin to ascend, provided the weight of the vessel be not such, as, together with

* Which if they did, the air so admitted would increase the weight of the whole by precisely the same quantity by which the air externally displaced was increased.

that of the fluid within it, to equal or exceed the weight of the air displaced.

Fluids lighter than the air may be obtained from a variety of different substances, and in a variety of different ways. The gas commonly burnt in our streets is a fluid of this kind; and large silken bags filled with this gas, displace a quantity of air whose weight is greater than their own weight, and are for that reason made to ascend by the upward pressure of the air. Bags so filled with gas will carry with them a weight nearly equal to the difference between their own weight and that of the air which they displace.

Not only, however, can we make artificially other liquids lighter than the air, but we can make any one portion of the air lighter than the rest. This we may do by heating it. All bodies expand or increase their dimensions by the application of heat, and of all bodies the air is probably that which expands most readily, or is most sensitive to the variations of heat. If we take any portion of the air around us, and expand that air, by the application of heat, over a larger space, then will it displace a portion of the surrounding air, *greater* than itself in bulk, and the result will be, that on the principles we have explained, it will be made to *ascend*. This expansion of certain portions of the air, and their consequent ascent through the surrounding air, is a process which we observe to be continually going on around us. The smoke which ascends through our chimneys, is air rarefied by the heat of the fire, and carrying with it small portions of unconsumed coal. The operation takes place, however, on a much more magnificent scale under the influence of the sun. Within the tropics, where its power is greatest, the air is continually under-

going rarefaction, and is thus rendered lighter than that on either side of them; it is, therefore, weighed up, and made continually to ascend by the pressure of that air, which as continually occupies the space which it leaves. As the heated air ascends, it loses its heat, and therefore contracts its dimensions, and moving off towards the poles eventually descends to the earth's surface, to return again to the equator in its turn. Thus, there is a continual circulation of air kept up between the polar and equatorial regions of the earth; combining with the rotation of the earth to constitute that prevailing direction of the wind towards the tropics, so well known to sailors under the name of the Trade Wind

Similar effects to these, produced on the surface of the earth by local variations of temperature, constitute winds. Thus a sudden fall of rain or snow, at any particular spot, may *there* so increase the weight of the air, as to make it weigh up all the surrounding air; high winds will be the result, having on the earth's *surface* a direction *from* the spot where condensation has thus taken place.

We have shown it to be possible, that the air which surrounds us may be a heavy fluid, exercising great pressure upon the surface of our bodies, attended by all the phenomena observable in other cases of fluid pressure, and yet we ourselves be altogether unconscious of that pressure. We may be living in a fluid at the bottom of an ocean, as we see fish to be living in the sea, receiving large quantities of it at every instant into our bodies, and exhaling it, as we observe a current of water to pass through the gills of fishes, and yet perceive but few of its properties, scarcely even be made aware of its existence. Accordingly, philosophers reasoned and speculated for two thousand years on the subject of the atmosphere before they discovered that it was

material, a fluid, and had *weight.* This is easily explained; there are no *direct* observations which lead us to the conclusion that air has weight. There is, indeed, little or nothing in the phenomena which establish that conclusion, to guide us to the connexion between those phenomena and the question of atmospheric pressure. A link is wanting. The theory of hydrostatic pressure establishes that link. Thus a man, ignorant of the principles of hydrostatics, can perceive no relation between the ascent of water in a tube by suction, and the weight of external air. But let him acquire a knowledge of the principle, *that a heavy fluid cannot rest until the pressure upon* every point in the same horizontal *plane is the same,* and this connexion is at once established.

Thus it was that philosophers endeavoured in vain, for some two thousand years, to account for the ascent of fluids by suction, until, hopeless of a solution, they pronounced it to be an *anomaly*—a freak of Nature—an unaccountable antipathy which she had taken to an empty space. They asserted, for instance, that when the air was removed from a tube, one end of which was immersed in water, Nature, *abhorrent* of a vacuum, thrust the water immediately into it, to fill up the vacant space; and that she did this, notwithstanding the opposite tendency of the water to descend by reason of its weight.

It having, however, happened to some engineers at Florence to discover that water could not be raised in a pump, suck out the air as much as you would, above the height of thirty-two feet, this principle of the *utter* abhorrence of Nature for a vacuum was found to require some qualification; and its limits were accordingly fixed by Galileo*, at 32 feet.

One Torricelli, a pupil of Galileo, doubting the explanation of his master, reasoned upon the question

somewhat in this way. Since by the absolute removal of the air above it, a column of water can be supported at the height of thirty-two feet, and no higher, it would seem that the force, whatever it may be which supports it, should be precisely equal to the weight of such a column; and that, therefore, that force would not probably have supported so high a column, had the liquid been some other, heavier than water, so that the abhorrence of Nature would not in the case of a heavier liquid extend so high as thirty-two feet. He tried mercury; and he found that, however perfect the vacuum made above its surface, it would not stand at above twenty-eight or thirty inches. This column of mercury, he then ascertained to be precisely of the same weight with a column of thirty-two feet of water, of the same diameter.

Hence, therefore, it became apparent to him, that the cause, whatever it was, was subject to this law, that it should always develop a force equal to the weight of the liquid supported, whatever that liquid might be. This abhorrence of nature for a vacuum was therefore no freak, but like every other developement of her energies in unorganized matter, the subject of a fixed and invariable law. Reasoning further upon his experiment, and applying to it certain principles of hydrostatics, which had by that time become known, he at length perceived its connexion with the external pressure and weight of the atmosphere, arrived at its true explanation, and constructed the Barometer, by which we are enabled to *measure*, at any time, the exact pressure of the atmosphere upon a given surface at the place where we make our observations; and which, whether we consider it in reference to the importance, and ex-

treme accuracy of its indications, or the remarkable simplicity of its construction, deserves to be ranked among the most perfect of our instruments.

[Abridged from Moseley *on Mechanics applied to the Arts.*]

Many persons have been injured by the imposing name of Philosophy. Philosophy, when it is employed in promoting good morals, in cultivating liberal arts, in strengthening social union, in contemplating the works of creation, and thus leading man to acknowledge and adore the Supreme Being, is a noble science: it is noble, because true; and true, because consistent and corresponding with the nature of man, and with the relations he bears to his fellow-creatures, and to his Maker. But that which *assumes* the name of Philosophy, and under this mask injures morals, dissuades from mental improvement, disunites society, discerns not the wisdom of God, either in the earth or the heavens, and discourages men from paying the tribute of gratitude to their universal Father, such a system of doctrines is detestable, because false,—and false, because contrary to the nature of man, and his several relations to society and God. Real Philosophy we should cherish and love: it is the friend of man, being the source of wisdom, the origin of many comforts, and the handmaid of religion. That which comes under its borrowed name, which puts on a semblance of what in fact it is not, and which if we are compelled to call Philosophy, we must, if we would speak properly, term false Philosophy: *that* is the evil against which we are to guard, that the credulous and innocent may not be betrayed by the deceits, the forgeries, and enchantments of this visored impostor.—Bishop Huntingford.

There is in the very taste and feeling of moral qualities, a pleasure or a pain: and the argument is greatly strengthened by the adaptation to that constitution of external nature, more especially as exemplified in the reciprocal influences which take place between mind and mind in society. The first, the original pleasure, is that which is felt by the virtuous man himself; as, for example,

by the benevolent, in the very sense and feeling of that kindness whereby his heart is actuated. The second is felt by him who is the object of this kindness; for merely in the conscious possession of another's good-will, there is a great and distinct enjoyment. And then the manifested kindness of the former awakens gratitude in the bosom of the latter; and this, too, is a highly-pleasurable emotion. And lastly, gratitude sends back a delicious incense to the benefactor who awakened it. By the purely mental interchange of these affections, there is generated a prodigious amount of happiness: and that, altogether independent of the gratifications which are yielded by the material gifts of liberality on the one hand, or by the material services of gratitude on the other. Insomuch, that we have only to imagine a reign of perfect virtue; and then, in spite of the physical ills which essentially and inevitably attach to our condition we should feel as if we had approximated very nearly to a state of perfect enjoyment among men; or, in other words, that the bliss of Paradise would be almost fully realized upon earth, were but the moral graces and charities of Paradise firmly established there, and in full operation. Let there be honest and universal good-will in every bosom, and this be responded to from all who are the objects of it, by an honest gratitude back again; let kindness, in all its various effects and manifestations, pass and repass from one heart and countenance to another, let there be a universal courteousness in our streets, and let fidelity and affection in all the domestic virtues take up their secure and lasting abode in every family; let the succour and sympathy of a willing neighbourhood be ever in readiness to meet and to overpass all the want and wretchedness to which humanity is liable; let truth, and honour, and inviolable friendship between man and man, banish all treachery and injustice from the world; in the walks of merchandise, let an unfailing integrity on the one side, have the homage done to it of unbounded confidence on the other, insomuch, that each man, reposing with conscious safety on the uprightness and attachment of his fellow, and withal rejoicing as much in the prosperity of an acquaintance, as he should in his own, there would come to be no place for the harassments and the heart-burnings of mutual suspicion, or resentment, or envy.—CHALMERS.

THE PEARLY NAUTILUS,

(Nautilus pompilius.)

THE inhabitant of this singular shell had long been sought after with eagerness by naturalists, and it is only within these few years that its true nature has been ascertained. We are indebted for this knowledge to the researches of Mr. Bennet, who, while engaged in a voyage among the Polynesian Islands, captured a specimen containing a living animal, which was brought to England, and is now deposited in the museum of the Royal College of Surgeons in London. The Nautilus, although an inhabitant of a shell, belongs to that order of molluscous (*soft-bodied*) invertebral animals, to which the name of *Cephalopoda* has been given, from two Greek words, meaning head and foot, because their organ of motion, or foot, is attached to the head.

THE PEARLY NAUTILUS.
Showing the Animal, and a Section of its Shell.

We have already described two species of this order, namely, the Cuttle-fish, and the Argonaut. The Nautilus, although in its general conformation agreeing sufficiently with these to be placed in the same order, still differs in many material points. In the case of the Cuttle-fish, the shell is completely hidden by the fleshy portions of the animal; and although the Argonaut possesses an external shell, it is simple in its formation, not being formed into chambers like that of the Nautilus. The use of these cells to the animal we are now describing is at present not well understood, but they are supposed to be employed by their inhabitant for the purpose of rising or sinking in the water at will. The body of this *Cephalopode*, it will be seen, only occupies the outer cell of its habitation, its increased size having rendered it too large to remain in that preceding it. If, as the animal deserted its smaller tenements, one after the other, they had been filled up with solid matter, the shell would have become too cumbersome for its owner; so that we here have another proof of the providing care of the Creator. We shall describe, in Mr. Bennet's own words, the capture of this interesting object.

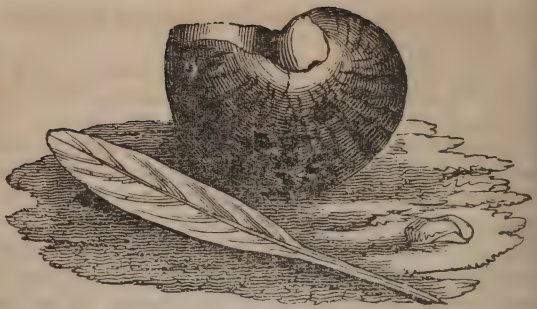
"It was on the twenty-fourth of August, 1829, (calm and fine weather, thermometer at noon 79°,) in the evening, when the ship Sophia was lying at anchor in Marakini Bay, on the south-west side of the island of Erromanga, one of the New Hebrides group, Southern Pacific Ocean, that something was seen floating on the surface of the water, at some distance from the ship; to many it appeared like a small dead tortoise-shell cat, which would have been such an unusual object in this part of the world, that the boat which was alongside of the ship at the time,

was sent for the purpose of ascertaining the nature of the floating object.

"On approaching near, it was observed to be the shell-fish commonly known by the name of the Pearly Nautilus; it was captured and brought on board, but the shell was shattered from having been struck with the boat-hook in taking it, as the animal was sinking when the boat approached, and had it not been so damaged, it would have escaped. I extracted the fish in a perfect state, which was firmly attached to each side of the cavity of the shell." The hood has been stated by Dr. Shaw, as being "of a pale, reddish-purple colour, with deeper spots and variegations," the colour, however, as it appeared in this recent specimen, was of a dark reddish brown.

Although this is the only instance of the animal itself having been brought to this country, there is but little doubt of its having been frequently taken, but as the shell was the object of the captors and not its inhabitant, the latter has been thrown away as useless. An officer in his Majesty's Navy, found a Nautilus in a hole in a reef of rocks, near an island on the eastern coast of Africa; the mantle of the fish, like a thin membrane, covered the shell, which was drawn in as soon as it was touched, and the elegant shell was then displayed. "I and others," says the same informant, "when it was first seen, did not notice it, regarding the animal, as the membrane enveloped the shell, merely as a piece of blubber, but having touched it by accident, the membranous covering was drawn in, and we soon secured our beautiful prize."

BEAK OF THE NAUTILUS.



THE SHELL OF THE NAUTILUS.

Rumphius, a German naturalist, appears to have been acquainted with its habits; he says, "When he thus floats upon the water, he puts out his head, and all his barbs, and spreads them on the water, with the poop of the shell above water: but at the bottom he creeps in a reverse position, with his boat above him, and with his head and barbs upon the ground, making a tolerably quick progress. He keeps himself chiefly on the ground, creeping sometimes also into the nets of the fishermen: but after a storm, as the weather becomes calm, they are seen in troops floating on the water, being driven up by the agitation of the waves. Whence one may infer that they congregate in troops at the bottom. This sailing, however, is not of long continuance, for having taken in all their tentacles, they upset their boat, and so return to the bottom."

WOULDST thou know the lawfulness of the action which thou desirest to undertake, let thy devotion recommend it to Divine blessing: if it be lawful thou shalt perceive thy heart encouraged by thy prayer; if unlawful, thou shalt find thy prayer discouraged by thy heart. That action is not warrantable which either blushes to beg a blessing, or having succeeded, dares not present a thanksgiving.—QUARLES.

THE ARCHBISHOP AND THE HIGHWAYMAN

THE following singular anecdote is preserved in the family of the late justly-celebrated Dr. Sharp, archbishop of York, and grandfather of that highly-benevolent, useful, learned, and eminent man, the late Granville Sharp, Esq.

It was his lordship's custom to have a saddle-horse attend his carriage, that, in case of fatigue from sitting, he might take the refreshment of a ride. As he was thus going to his episcopal residence, and was got a mile or two before his carriage, a decent well-looking young man came up with him; and, with a trembling hand and a faltering tongue, presented a pistol to his lordship's breast, and demanded his money. The archbishop, with great composure, turned about, and looking stedfastly at him, desired he would remove that dangerous weapon, and tell him fairly his condition. "Sir! Sir!" with great agitation cried the youth, "no words, 'tis not a time, your money instantly." "Hear me, young man," said the archbishop, "you see I am an old man, and my life is of very little consequence; yours seems far otherwise I am named Sharp, and am archbishop of York; my carriage and servants are behind. Tell me what money you want, and who you are, and I will not injure you, but prove a friend. Here, take this, and now ingenuously tell me how much you want to make you independent of so destructive a business as you are now engaged in." "Oh sir," replied the man, "I detest the business as much as you. I am—but—but—at home there are creditors who will not stay: fifty pounds, my lord, indeed, would do what no tongue besides my own can tell." "Well, sir, I take it on your word; and, upon my honour, if you will, in a day or two, call on me at ——, what I have now given you shall be made up that sum." The highwayman looked at him, was silent, and went off; and, at the time appointed, actually waited on the archbishop, and assured his lordship his words had left impressions which nothing could ever destroy."

Nothing further transpired for a year and a half or more, when one morning a person knocked at his grace's gate, and with a peculiar earnestness desired to see him. The archbishop ordered the stranger to be brought in. He entered the room where his lordship was, but had scarce

advanced a few steps before his countenance changed, his knees tottered, and he sank almost breathless on the floor. On recovering, he requested an audience in private. The apartment being cleared, "My lord," said he, "you cannot have forgotten the circumstance at such a time and place; gratitude will never suffer them to be obliterated from my mind. In me, my lord, you now behold that once most wretched of mankind; but now, by your inexpressible humanity, rendered equal, perhaps superior, in happiness to millions. Oh, my lord," tears for a while preventing his utterance, "'tis you, 'tis you that have saved me, body and soul; 'tis you that have saved a dear and much-loved wife, and a little brood of children, whom I tendered dearer than my life. Here are the fifty pounds, but never shall I find language to testify what I feel. Your God is your witness; your deed itself is your glory; and may heaven and all its blessings be your present and everlasting reward! I was the younger son of a wealthy man; your lordship knows him; his name was ——. My marriage alienated his affection, and my brother withdrew his love, and left me to sorrow and penury. A month since, my brother died a bachelor and intestate. What was *his* is become *mine*, and by your astonishing goodness, I am now at once the most penitent, the most grateful, and the happiest of my species."

Let not the quietness of any man's temper, much less the confidence he has in thy honesty and goodness, tempt thee to contrive any mischief against him; for the more securely he relies on thy virtue, and the less mistrust he has of any harm from thee, the greater wickedness will it be to entertain even the thought of doing him an injury.——Bishop Patrick.

There are some vices which carry a sword in their hands, and cut a man off before his time.——Jeremy Taylor.

It is a great consolation to the true Christian under the assaults and indignities of his enemies, that he has thus an opportunity given him of bestowing that forgiveness on his fellow-creatures, which is the pledge and condition of his own pardon from his Creator.

PERSEVERING INDUSTRY.

A BRICKLAYER in the neighbourhood of Cambridge named Joseph Austin, had often looked with a longing eye upon a bit of waste ground by the road side. He used to think what a nice place it would be for a house; and as soon as he fell asleep at night, he dreamt that he was at work there, with his bricks and trowel. At length he applied to the manor court, and obtained permission to build on the spot, upon paying a quit-rent to the lord of the manor, of six-pence a year. Austin was at this time forty-two years of age: he had a wife and four children, and his whole stock of worldly riches amounted to fourteen shillings: but men who really deserve friends are seldom long without them; and a master for whom he usually worked at harvest, sold him an old cottage for nine guineas, which he was to work out.

Austin had for some time, in his leisure hours, been preparing bats, a sort of bricks, made of clay and straw well beaten together, and not burnt, but dried in the sun. He went to work with these bats and the materials of the old cottage. As he had to support himself and his family by his daily labour, this building could only be carried on when his regular day's work was done: he often continued it by moonlight, and heard the clock strike twelve, before he desisted from an occupation in which his heart was engaged; this too, when he had to rise at four the next morning, to walk to Cambridge, nearly four miles distant, to his work, and return in the evening. If his constitution had not been unusually strong, he must have sunk under these extraordinary exertions. In fact, his frame of body appears to have been as invincible as his spirit. When the building was one story high, and the beams were to be laid on, the carpenter discovered that the timber from the old cottage would not serve for so large a place. This was a severe disappointment: but not discouraged by it, he immediately covered the walls with a few loads of haulm, to protect them from the weather, and began to build a smaller place, in the same manner, at the end; working at it with such perseverance, that he could get his family into it within four months after the foundations were laid. This great object being accomplished he went on leisurely with the rest, as he could save money for what was

wanting: after five years, he raised the second story, and in ten, the house was tiled and coated.

In this manner did Joseph Austin, with singular industry and economy, build himself a house, which he began with only fourteen shillings in his pocket. During that time, he buried four children, and had a wife and four more to maintain. The money that it cost him was about fifty pounds, the whole of which was saved from the earnings of daily labour.

Extract from an Episcopal Address of Bishop Doane, of New Jersey.

I venture to say that there is, in our political and civil institutions, too little reference to Him who is the only source and security of whatever is good in them. I enter into no discussion of the causes of this deficiency, or of the apologies for it. The fault exists, and is to be regretted. What is still more to the purpose, it is, so far as may be to be obviated. "Righteousness exalteth a nation, but sin is the reproach," and will be the destruction "of any people." Already it begins to be felt that, from the want of a pervading religious principle, the institutions which have cost so much, and promised so well, fail of their expected result; and wise and good men of all parties, and of every name, unite in the conviction, that, unless, as a nation, we seek the blessing of the Holiest, the best hopes of humanity must suffer disappointment. There is but one escape from this result; in national repentance, national humiliation, national submission to Christ. As individuals we ourselves must do our part, by turning truly to the Lord. A *public* Christian recognition of our dependence on Him as a *nation*, and of our duty, as a *nation*, towards Him, will have its weight with others; and may prevail, if we pour out our hearts before Him, in winning, through the intercession of the divine Saviour, that blessing, without which all we do is vain.

It is among the wicked maxims of bold and disloyal undertakers, that bad actions must always be seconded with worse, and rather not be begun than not carried on, for they think the retreat more dangerous than the assault, and hate repentance more than perseverance in a fault.—*Icon Basilike.*

DRUIDICAL TEMPLE, NEAR KESWICK, IN CUMBERLAND.

Time-honour'd pile ! by simple builders rear'd,
Mysterious round, through distant times rever'd,
Ordain'd with earth's revolving orb to last,
Thou bring'st to mind the present and the past.
Dr. Ogilvie's *Fame of the Druids.*

The Druidical Circle is on the summit of a bold and commanding eminence called Castle-Rigg, about a mile and a half on the old road, leading from Keswick, over the hills to Penrith,—a situation so wild, vast, and beautiful, that one cannot, perhaps, find better terms to convey an idea of it than by adopting the language of a celebrated female writer, (Mrs. Radcliffe,) who travelling over the same ground years ago, thus described the scene. "Whether our judgment," she says, "was influenced by the authority of a druid's choice, or that the place itself commanded the opinion, we thought this situation the most severely grand of any hitherto passed. There is, perhaps, not a single object in the scene that interrupts the solemn tone of feeling impressed by its general character of profound solitude, greatness, and awful wildness. Castle-Rigg is the centre point of three valleys that dart immediately under it from the eye, and whose mountains form part of an amphitheatre, which is completed by those of Borrowdale on the west, and by the precipices of Skiddaw and Saddleback, close on the north. The hue which pervades all these mountains is that of dark heath or rock, they are thrown into every form and direction that fancy would suggest, and are at that distance which allows all their grandeur to prevail. Such seclusion and sublimity were indeed well suited to the dark and wild mysteries of the druids."

These temples of the druids, though all in a circular form, (supposed to have been emblematic of the Deity,) present three varieties, which Dr. Stukeley classed as follows. The round temples, simply, he called temples, and such he considered to be the one at Rollrich, in Oxfordshire, and which also resembles this. Those with the form of a snake annexed, as that of Abury, in Wiltshire, he called serpentine temples, or *Dracontia*, by which they were denominated of old; and those with the form of wings annexed (as he supposed Stone-Henge to have been); those he called *Altæ*, or winged temples.

The one here spoken of, is of the first, or simple class, and consists, at present, of about forty stones of different sizes, all, or most of them, of dark granite,—the highest about seven feet, several about four, and others considerably less; the few fir-trees in the centre are, of course, of very modern growth. The form may, with more propriety, be called an oval, being thirty-five yards in one direction, and thirty-three yards in another, in which respect, it assimilates exactly to that of Rollrich; but what distinguishes this from all other druidical remains of a similar nature, is the rectangular enclosure on the eastward side of the circle, including a space of about eight feet by four. The object of this is a matter of conjecture;—by some it is supposed to have been a sort of Holy of Holies where the Druids met, separated from the vulgar, to perform their rites, their divinations, or sit in council to determine controversies; others consider it to have been for the purposes of burial, probably it might have been intended for both.

That the Druids also performed their worship in the seclusion of groves is a fact generally stated in history. The Isle of Anglesey, formerly covered with wood, was a celebrated sanctuary for them; and it

is more than probable that these circular stone temples, in the midst of elevated moors or plains, were places at which the people from the surrounding districts were at stated times assembled either for the purposes of justice, or for determining upon affairs affecting the welfare of the community, and which meetings were also accompanied with the performance of religious ceremonies.

That the earliest temples and altars were formed of stones, rough and unhewn, is we believe admitted by all writers. Numerous passages may be quoted from the Old Testament in allusion to it, but one amongst the rest may be noticed more particularly; viz., Exodus xxiv. 4: "And Moses rose early in the morning, and builded an altar under the hill, and twelve pillars according to the twelve tribes of Israel." It appears also that, in patriarchal times, they planted groves as temples for worship, and in hot countries this was done, as well for convenience in summer season as also for magnificence. Abraham we read "dwelt long at Beersheba, where he planted a grove, and called upon the name of the Lord," and in these groves were also erected temples of stone.

The patriarchal mode of worship passed over all the western world, and is supposed to have been introduced into this country by the neighbouring Celtæ or Gauls, or by the Phœnicians, who traded hither for tin. However this may be, when the Romans invaded Britain, they found the Druids presiding over and conducting the worship of the country; acting also as judges and arbiters in all differences and disputes, both public and private. It is from Cæsar, and other Roman writers, that most of the information we have respecting them is derived, for they had no written rules or regulations either as to their religion, their science, or their laws.

The accounts therefore furnished by these historians of the religion and customs of the Druids, written principally from mere report, and under an hostile impression towards them, are not altogether to be relied upon; indeed, the barbarities ascribed to them, in the ceremonial of their religion, are so much at variance with their high and acknowledged character in learning and general science, that one cannot but imagine them to be highly exaggerated, if not altogether fabulous.

The best authorities on the subject of the Druids seem to agree in the following description of them. They were the first and most distinguished order amongst both the Gauls and Britons; they were chosen from the best families, and the honours of their birth, joined with those of their function, procured them the highest veneration amongst the people. They were versed in astrology, geometry, natural philosophy, politics, and geography; they were the interpreters of religion, and the judges of all affairs indifferently; they were the instructors of the youth, and taught by memory, as they never allowed their instructions to be written.

Their garments were remarkably long, and when employed in religious ceremonies they always wore a white surplice. They generally carried a wand in their hand, and wore a kind of ornament enchased in gold, about their necks, called the Druid's egg; they are also represented with a hatchet in their girdle, used for the cutting of the mistleto.

They believed in the immortality of the soul, and worshipped one Supreme Being. They attached a degree of sanctity to the oak, and wore chaplets of it in their religious ceremonies. They were deeply versed in astronomy, and computed their time by nights and not by days, and all their great solemnities, both sacred and civil, were regulated by the

age and aspect of the Moon. Their most august ceremony of cutting the mistleto from the oak was always performed on the sixth day of the Moon. In medicine also, they were great proficients, and possessed, in fact, great store of knowledge in all sciences; so much so, that Pliny speaks of them as practising magic, and being so great proficients therein, as to equal the Persian and Chaldæan Magi, so that one would even think, he says, that the Druids had taught it them.

The number three was said to be a favourite number with them, and that part of their religious worship consisted in a solemn adoration, or three silent bowings.

The Romans, on their invasion, endeavoured to exterminate the Druids, but it does not appear that they induced the natives to adopt their own system of polytheism. The seeds of their ancient religion still continued implanted in their minds, and opened a ready access to the doctrines of Christianity, which are said to have made more progress in this country and Gaul (from the time of the first preaching of th Gospel) than in any other.

Of this old patriarchal religion, the only remains in substance, to be found at present, are the ston temples, of which few, if any, are in so perfect a state as the one here represented. The groves hav long since fallen beneath the axe, and most of th stone temples have been spoiled for the value of the materials in making fences or roads, or mending habitations; the mallet of the geologist now comes in to aid the destruction, as was witnessed when the sketch of this plate was taken; so that, in a few years more, this temple, like the rest, may disappear.

Of the forms and ceremonies of the religion no traces are to be found, except in the representation of scenes of magic, in which we invariably see the

magic circle,—the witch in a robe, with a wand in her hand, and various other allusions to druidical ceremonies. Who can think of the subject without calling to mind the scene in *Macbeth*, where Hecate, by way of preparation for the incantation, says to the Witches—

> I 'm for the air . . . .
> Upon the *corner* of the *moon*
> There hangs a vaporous drop profound,
> I'll catch it, ere it come to ground;
> And that, distill'd by magic slights,
> Shall raise such artificial sprights,
> As, by the strength of their illusion,
> Shall draw him on to his confusion.

Part of the ingredients of the caldron were

> . . . . . Slips of yew
> Slivered in the *moon's* eclipse

and there are other passages alluding to their ceremonials.

"Time rolls his ceaseless course," bearing on his wings the lessons of Divine Truth to the different regions of the earth. How many forms of religion have already been cast into the shade by them? And the period will doubtless arrive when the Temple of Jagganatha, now an object of veneration to millions, will, with his ceremonies, become the subject of some legendary tale, or like the Druid's temple, a mere theme for the antiquary.

THE religious pleasures of a well-disposed mind move gently, and, therefore, constantly. It does not affect by ecstasy and rapture, but is like the pleasure of health, still and sober, yet greater and stronger than when the senses make grosser impressions.—SOUTH.

THE CATHEDRAL OF CHRIST-CHURCH, OXFORD.

King Henry the Eighth, on dissolving the monasteries in this country, determined to apply a portion of the funds arising from them to the erection and endowment of some new collegiate churches and bishoprics. Thus he added six episcopal sees to the old number, five of which are retained;—Bristol, Chester, Gloucester, Oxford, and Peterborough, (the two latter having been taken out of Lincoln;) but the sixth, the bishopric of Westminster, after continuing ten years, was abolished in the reign of Edward the Sixth. It is a curious fact, that five other dioceses were contemplated by Henry; viz., Bodmin, Colchester, Dunstable, Shrewsbury, and Southwell; neither of which, owing to the king finding other ways for his money, was ever matured according to the plan devised. In 1546, he removed the see of Oxford from the ancient abbey-church of Osney, where it had been established for five years, to the church of St. Frideswide, from that time called Christ-Church Cathedral; Dr. R. King, abbot of Osney, becoming the first bishop of Oxford. Antiquaries have been eloquent in the praise of the abbey-church of Osney, which was about half a mile from Oxford, assuring us that in extent and beauty, "it was not only the envy of other religious houses in England, but also beyond the seas."

As the venerable structure represented in the plate was originally the church of St. Frideswide, on the site of whose monastery the noble and distinguished college of Christ-Church (first founded by Cardinal Wolsey,) also stands, we cannot forbear giving the legendary history of this lady. Frideswide, anciently honoured as the patroness of Oxford, was the daughter of Didanus, a petty prince in those parts, who had

founded an abbey. Algar, Earl of Leicester, fell deeply in love with the maiden, and coveted her for his wife, though she was a nun, and had been set apart as sacred from the world. Meeting with a refusal, he wickedly resolved to carry her off by force; but the virgin, as it is said, miraculously warned of his design, withdrew privately in a boat, to a place ten miles from Oxford, called Benton, where she lay concealed with two of her ladies, in a forsaken hut covered with ivy. Algar in the mean time, following up his purpose, threatened to destroy the town of Oxford, if the inhabitants did not inform him where Frideswide was hidden; till at length, being struck with blindness near the north gate, for his bold impiety, he acknowledged the hand of Providence, implored and obtained the virgin's prayers, was restored to sight, and, going home, ceased to trouble her more. "From which time," as the legend declares, "for divers ages, none of our kings durst enter Oxford, lest they should have met with a like disaster!" She died in 739.

Christ-Church Cathedral is supposed to have been built about the year 1200. It has much of the Norman style, with a tower in the centre, surmounted by a spire of early English architecture. The exterior is greatly hidden by the college-buildings with which it is surrounded; being on the east of the grand square of Christ-Church. The interior contains many interesting objects of attention. The arches of the nave, part of which have been demolished, are in a double series. The choir, which was wainscoted with oak in the time of Charles the First, is very handsome; the roof, a fine piece of stonework, put up by Wolsey, being richly groined and adorned with pendants. The pulpit is antique, and curiously carved. On the north of the choir are chapels of a later period than the rest of the building. In the Dean's chapel are some

ancient altar-tombs, and the shrine of Frideswide, an elaborate and magnificent tomb, consisting of three tiers of tabernacle work, the upper tier of which is richly ornamented with canopied niches. Many of the windows were destroyed during the parliamentary war. Among the monuments are those of Lady Elizabeth Montacute; of Robert Burton, author of the *Anatomy of Melancholy;* of several members of the university, and of other eminent persons who died at Oxford, while Charles the First held his court at Christ-Church; also a very fine statue of Dr. Cyril Jackson, by our eminent living sculptor Chantrey. Part of the cloisters remain. The chapter-house is a beautiful specimen of the early English style.

The following is, we believe, a correct statement of the dimensions of this cathedral.

Length from east to west	154 feet.
Height of choir	37½
Height in the western part	41½
Length of cross aisle, from north to south	102
Height of steeple	144

It would not be right in our short account of the building, to pass by without notice "the bonny Christ-Church bells," which, ten in number, hang in the tower of the Cathedral, and which were brought thither from Osney Abbey. Nor must we omit to mention "the Mighty Tom," the largest bell in England, which was also brought from Osney to this church, and has formed the subject of more than one classical copy of verses. On hearing its well-known sound, the students of the University take it as a signal to retire within their respective colleges. Willis says "Bishop John Fell, who built the noble tower in front of the stately gate of Christ-Church, removed thither, out of the campanile or bell-tower in the cathedral, the great bell called Tom; which Thomas, now called Great Tom of Christ-Church, had this inscription anciently on it:—

In Tnomæ laude
Resono Bim Bom sine fraude."

Which monkish couplet of bad latin may be thus " done into English ;"

In praise of Thomas, I repeat
My Dong ! Ding ! Dong ! without deceit.

" Dr. Tresham, a papist, is said to have baptized this bell by the name of Mary, when it was removed from Osney to Christ-Church, where he was canon, for the joy of Queen Mary's reign." The excellent Dr. Fell had it recast in 1680, by Christopher Hodson of London, with additional metal .

Diameter of the Bell	7 feet 1 inch.
From the crown to the rim	5 „ 9
Thickness of striking-place	0 „ 6
Weight	18000 lbs !
Weight of Clapper	342 lbs.

The Love of Truth is a most important habit to cultivate, and it claims an alliance with the heart as well as the head. It must be grounded on a virtuous disposition, for no vicious person can be a lover of truth. We ought always to remember that our reasoning faculties were not given us to exercise them as mere whim or fancy might dictate, but to be the active instruments of guiding us to truth, and promoting our happiness as rational and immortal creatures. To enter into verbal or written disputations for the mere sake of argument, is a pernicious practice. It will, if continued for any length of time, make a person altogether insensible to truth, and will unhinge the whole fabric of his mind. Unless, therefore, a love of truth occupies a conspicuous station among our mental excellencies, we shall make no progress in real knowledge. Our mind will present an unseemly and disorderly assemblage of contradictory systems and opinions. it will be without order, symmetry, or grace, and the clouds of prejudice will hang over the chaotic mass, just admitting as much light through the hazy medium, as to make the scattered fragments of truth darkly visible.—Blakey.

ON THE MORAL AND PHYSICAL CONDITION OF MAN.

It is not in respect to his physical nature alone, that man is so highly elevated in nature. In respect to his moral and religious nature also, man enjoys a high privilege in the converse which it is permitted him to hold with the Most High in his works.

However a knowledge of the truths of Natural Science may offer to him the means of augmenting his temporal welfare, did the study thereof produce an influence pernicious to him, in regard to that welfare which is eternal, who would not wish that it should for ever be to him as a sealed book? But it is not so. The principles of physical science, if rightly viewed, point directly to *some* of the great and most important truths of Revelation; above all, they lead directly to an assured knowledge of the existence and attributes of God. "For the *invisible* things of him from the creation of the world are clearly seen, being understood by those things which are made, even his eternal power and Godhead *."

There is a perpetual chain of cause and effect visible through all Nature. Wherever man directs his investigation, he finds causes which are but the effects of others, and these of others in a perpetual chain. Is it wonderful, that he should look for a *first cause*, to which this infinity of effects stands in the same relation that he does to such as are the consequences of his own actions.

Although his search for that first cause among the beings whose existence is made known to him through the medium of sensation, be in vain, yet, ascending through the chain of causes, he has a distinct consciousness that he is approximating to the *first cause*.

The number of facts which he perceives to stand in the relation of causes to the rest, continually diminishes as he proceeds, until at length, he arrives at certain of them, beyond which his senses refuse to carry him; and these seem to him to stand next in order to the first cause. They may be classed under the heads of TIME, SPACE, MATTER, and FORCE.

In considering the relations of Time, Space, Matter, and Force, one of the first things that strikes us, is the uniformity of those relations. Such that the same cause shall, under the same circumstances, always produce the same effect. This uniformity constitutes a LAW; and each particular relation of cause and effect, thus uniform, is a LAW OF NATURE.

With regard to such actions as are the immediate subjects of man's own will, every one perceives that he has the power of modifying and varying them, together with the sequence of cause and effect growing out of each, in every conceivable degree; and that he has also the power of adjusting his effort as first cause, so as to produce a certain remote effect, and neither more nor less than that effect. This adaptation of the primary cause (and with it of all the intermediate causes,) to the remote effect, he calls DESIGN. It is this power of *design*, or *contrivance*, which distinguishes the relation of cause and effect, in living and intelligent beings, from that which exists in the operation of inanimate agents and unintelligent beings. Wherever we trace this relation of cause and effect, coupled with design, we may conclude the existence and operation of an intelligent being.

Now this design is MANIFEST throughout Nature. Every blade of grass, every bud, every leaf, every blossom that the wind strews around us, every one of those organized and living beings by which we are surrounded, each of these, in its order, proclaims

* Romans i. 20.

design in the operation of that first cause to which it owes its being; and thus it proclaims the existence of a living and intelligent Creator.

Turning again from the contemplation of the works of God in the universe, to the consideration of his *own* powers, man perceives that not only can he render those powers available for the production of certain remote effects, but, further, that he can render those other *external* powers, over whose action he has no control, available to the same end. Not in any way modifying those powers, for that is impossible, —the mode or law of their action being by the will of the great First Cause,—but *applying* them. Thus, he can avail himself of the gravitating force, or weight, of a stone, to produce either pressure or impact; the action of the *stone* is the same, but in the one case, the impulses of gravitation which it continually receives, are as *continually* destroyed, whilst in the other, their accumulated energy is destroyed altogether. Nay, further, he has power to bring about the action of these natural causes upon one another. He can bring, for instance, matter under the action of force, and he can subject both to the influence of time and space. He can, further, induce the operation of these combinations in every possible degree upon one another.

Now, looking into the natural world, he perceives that there must have taken place in it some such operation as that of which he thus finds himself capable. All that now exists, might have existed as it does now; there might have been every atom of matter, every particle of force, and the same space occupied through the same time, and these subject to the same laws; and yet, had not these been brought under the operation or influence of one another, there would have remained a state of things,

the disorder of which it is beyond the power, or even the province, of imagination to conceive. The whole would have remained without form and void, replete with the elements of disorder, and the subject of perpetual change.

Here, then, we trace again, evidence of the operation of a First Cause, bringing together what we have termed second causes, and thus applying their combined action according to the laws which He has himself first imposed upon them, according to a method of operation to which man finds something similar, but inconceivably inferior in degree, in his own power.

There is yet another proof of the existence of the Deity, drawn from strictly scientific considerations, and founded indeed in the very principles of science.

Not only, do the planets revolve round the sun, but about certain axes within themselves, producing thereby the alternations of day and night; and these axes are inclined at certain angles to the planes of their revolution, thereby bringing about the variety of the seasons. Now to effect all this, as we find it effected, the one original impulse must have been made with a certain force, in a certain direction, and at a certain point, on the surface of each planet. Here, then is design. And when we consider that the whole of animated nature is contrived with a view to the alternations of light and heat,—the green leaf, the bud, the blossom, and the fruit, in vegetables; the clothing, the internal organization, and the principle of life, in animals—do we hesitate to admit that design to be the emanation of infinite wisdom?

If I wished to ascend or descend a hill, or pass from one portion of it to another, with the least possible muscular exertion or expense of force, a slight consideration would show me that the precise path to

be pursued, would be dependent on the form and inclination of the different parts of the hill, upon the nature of my own muscular energies, and upon other data, of which I could scarcely by any possibility acquire a knowledge, and on which, when known, my intellectual powers would be quite insufficient to enable me to found a conclusion. Under these circumstances, the chances are infinitely greater, that I should select the wrong than the right path. Now, if I were to project a stone up the hill, or obliquely across it, or suffer it to roll down it, whatever obstacles opposed its motion, whether they arose from friction, resistance, or any other cause, constant or casual, still would the stone, when left to itself, ever pursue that path in which there was the least possible expenditure of its efforts; and if its path were fixed, then would its efforts be the least possible in that path. This extraordinary principle is called that of least action; its existence and universal prevalence, admit of complete mathematical demonstration.

Every particle of dust blown about in the air, every particle of that air itself, has its motions subjected to it. Every ray of light that passes from one medium into another, deflects from its rectilinear course, that it may choose for itself the path of least possible action, and for a similar reason, in passing through the atmosphere, it bends itself in a particular curve down to the eye. The mighty planets too, that make their circuits *ever* within those realms of space, which we call our system; the comets, whose path is beyond it; *all* these are alike made to move so as best to *economize* the forces developed in their progress.

Now, those forces which are *not* developed by living beings, are planted in the substances in which they reside, by the hand of God, and subjected to

the laws which he from the beginning imposed upon them. It has pleased the Almighty then that the works of *his* hands should every-where be wrought in accordance with that principle of least effort, which he has also implanted as a principle of our nature in *us*, and which, thus impelled, we ever develop more or less, in our own feeble efforts. The difference lies only in this, that in Him this principle acts controlled by infinite wisdom, and therefore, its operation is *perfect*; with us, it manifests itself under the guidance of a limited knowledge and most erring judgment, and its developement partakes of their imperfections.

In the adjustment of his efforts, so as to produce the required effect with the least posible expense of force—it has been shown then, again, that (according to a great truth of revelation) man is created in the image of God, and that he retains the resemblance. The principle of force lodged in each particle of matter, has been believed to be but a direct emanation of the Deity, *there* acting continually, and at every moment. The scrupulous economy of force, the wonderful store (if the expression may be used) which Nature sets by it, points to that conclusion.

Man was created in the image of God. And it has been shown, that, in the possession of a power, almost absolute, over the material existences around him; and, in the exercise of an intellect whose resources no effort would seem to exhaust; and, in the manner in which he exercises that power and that intellect; he may yet be said to retain traces of that original from which he first sprung, and that image wherein he was first created.

Do not these reflections at once suggest the *contrast* of his moral condition? What does this description of his majestic bearing in creation, the extent of his physical powers, the resources of his intellect, and his resemblance, in respect to his

physical nature, to the God who made him, so forcibly present to the mind as the degradation of his moral nature, and its fall from that perfect image in which we may reasonably conclude that it too, as well as his physical nature, was first created.

[*Abridged from* Moseley's *Mechanics applied to the Arts.*]

HINDOO RIDDLES.

The Hindoos (especially their females) take great delight in riddles, apologues, and fables. By this method they convey pleasure, instruction, or reproof: see them in their marriage feasts, or in their "evenings at home," how pleasantly they pass their time in thus puzzling each other, and calling forth the talents of the young. The story of Sinthā-manni and Vera-māran is a striking instance of the importance which they attach to riddles.

The king, called Veerasoora-toora-tān, and his nobles went out with their chariots, horsemen, footmen, and elephants, to hunt the savage beasts of the desert. After some time the king complained of thirst, when the prime-minister took him to a deep well, and whilst his majesty was looking down, his faithless minister pushed him in; he then returned to the capital, published the death of the sovereign, and proclaimed himself king. The queen of the deceased monarch immediately went to a distant country, and procured a living by selling fire-wood. Not long after her residence there, some officers, on a hunting excursion, saw her, and told their sovereign of a majestic woman they had seen selling fire-wood. The king sent for her, became enamoured with her, and determined to make her his wife; but she, on pretence of going out a little, departed to another country. After travelling some days she came in

sight of the cottage of a despised pariah, and, on going near to it, he came out, and, seeing her noble mien, bowed to the earth. She said "I am a seller of fire-wood, and beg you will allow me to live near to you." The pariah replied, "Madam, you must be of another rank; you look like a queen. I will build your majesty a cottage, and supply your wants." She had not been long there before she brought forth a son to the late Veerasoora-toora-tān, to whom she gave the name of Vera-māran. The infant was anointed with oil, and rubbed with holy ashes. The pariah went forth, and blew the victorious chank, put up the triumphant flag, purchased anklets, a waist-chain, bracelets, armlets, and neck-rings, for the infant prince. So great was his joy, that he made gifts in money, robes, and cows, to the brahmins, and offerings to the gods.

In course of years, the youth became exceedingly beautiful and accomplished. In the battle or the chase he was always the hero of the field. He having heard of the fascinating princess Sinthā-manni, determined to try to get her for his wife, but was told she would not give her hand to any one who could not explain all her riddles, and those who failed were to forfeit their lives. His soul was fixed on the attempt; and, notwithstanding many princes had fallen a sacrifice to the talented princess, and in despite of the entreaties of his friends, he took his departure for the palace of Sinthā-manni When he came in sight of the city, he was perfectly astonished with its splendour. Now he thought of all he had heard of the nine hundred and ninety-nine gates; of the ponds and streams of perfumed waters; of the groves; of the fair deity of the palace, with her attendants, the astronomers, the heralds, the bearers of incense, the beautiful footmen, the nobles, the musicians; he thought on her banners of gold, her

throne of precious stones and gold; her shield, made of the same metal; her couch made of the nine precious stones; and his mind became enraptured with the prospect of having her for his own. With joy he entered the fort without asking permission, and galloped about the streets; after which he ordered his attendant to make a triumphal arch of fragrant flowers. He then spread his carpet on the ground, and sate there, that he might be seen by the passers by. They soon began to inquire about his country, and his object in coming to their city; and when they heard it, they laughed and clapped their hands, saying, "Another madman has come to explain the riddles of the princess, and to add another to the list of those whose lives have been sacrificed to their ambition."

He arose, and went on till he came to the tenth gate, when the guards pushed him away, and treated him with great contempt. He then sent a letter to the Princess by a confidential person, stating his object, and requesting to be allowed to come into her presence. The next day Veera-māran stood before the beautiful, the splendid Sinthā-manni; there she was seated on her throne of diamonds and rubies; there were the warriors, with their shields of gold; there were the poets, there the players on instruments, the tambour, the harps, and the lutes. Near her were females of great wisdom, and all around were garlands of flowers; there was the precious ointment, and there were those who sprinkled the guests with perfumed waters. Veera-māran looked around, and then with great dignity walked up to the Princess, and requested to have a seat by her side on the throne. She then commenced her riddles (which in number amounted to a thousand); but Veera-māran, so fast as she proposed them, gave

the most complete explanation. The Princess became greatly agitated, as she thought she must now give her hand to this young stranger. They sprinkled her with rose-water, all the courtiers were much excited, and one thing only remained to be done, before this wonderful transaction should come to its crisis. The Prince had to give her a riddle, which if she failed to explain, she became his own; but if she succeeded, his life was the forfeit. Veera-māran boldly gave his riddle, and retired for the night. In the course of the evening, a beautiful female, in elegant attire, came to his lodgings, and said, "O you who have beautiful arms, I have come to touch your majestic feet, and gain your favour." He inquired who she was, when she replied, "I am the daughter of the Prime-Minister to the Princess Sinthā-manni, to whom, I am told, you have proposed a riddle, which she cannot explain. Now I wish you to unfold it to me, that I may tell the meaning in the morning." The Prince then said, "Give me the jewels and ornaments which you now have on as a pledge, and I will unfold the riddle." This being done, she expresed a wish to retire for a moment, but did not return.

The morning came, and there was the Princess, with great pomp seated on her throne. In her hand was a large sword, and near her were the executioners, ready to drag off the body of Veera-māran. She then, with great triumph, explained the riddle he had proposed the day before, and was about to order him for execution, when he begged to be allowed to relate a dream he had during the night. This being granted, he said, "A young female, disguised like a parrot of the groves, came and pledged her jewels to get the meaning of my riddle. I will show them to you." He then began to take them from his waist-cloth, when the Princess waved he

hand for him to desist, and said, "I was your visiter —I am conquered. Come, sit on my throne." She then made obeisance to him; the courtiers worshipped him; and Veera-māran became the husband of the beautiful Sinthā-manni.

By this account, we gain a clearer view of the importance attached to the riddle proposed at the marriage of Sampson; of the Psalmist, who said, "I will open my dark sayings;" of the riddle "put forth" by the Prophet Ezekiel at the Divine command; of the skill and industry of the Queen of Sheba; and of the adroitness of Solomon who gave an answer "to all her questions."

[ROBERTS's *Oriental Illustrations of the Scriptures.*]

THE LINNET AND THE HAWK. A FABLE.

Too oft when Force and Cunning seek
To injure or delude the weak,
They prosper in their plan of shame,
Whilst Vengeance *waits* to take her aim;
For, till the cup of sin is full,
She walks unheard, with feet of wool!
Again, some cases I have known
Of Force and Fraud at once o'erthrown
By guardian spirits, who defend
The steps of Innocence, their friend.
Thus Una* in the wilderness
Was succoured in her sore distress;
The lion (says the legend sweet)
Crouched harmless at the maiden's feet.
And so the simple may prevail,
When Guilt and its devices fail.
To these reflections shall be tack'd
A *Fable*, which is nearly *Fact*.

Where London spreads its precincts wide,
There's many a house, whose smoky side,

In lane, or court, or alley plac'd,
Bears tokens of a rural taste,
And 'midst a busy town's alarms,
Tells of the country, and its charms.
Here on the window-sills are set,
Geranium, myrtle, mignonette;
And higher 'mongst created things,
Canaries trim their golden wings,
Or wrapped within his dingy coat
A goldfinch strains his little throat.
True he is caged: but what of that?
He sings, and cares not for the cat.

A LINNET, in his prime of song,
And happy as the day was long,
Though in a dark and narrow way,
Poured forth his merry roundelay.
His bars unknown; (though bars indeed)
His little manger full of seed;
What danger should he apprehend,
In health and tune, with man his friend?

But ah! he shrinks with sudden fear,
And feels a mortal foe is near!
Wheeling around in rapid flight
A cruel HAWK has caught the sight,
Has seen the bird! but blind with rage
And fierce desire, has seen no cage.
So when to glut his ruthless maw
With the poor trembler that he saw,
He headlong pounc'd the prize to gain,
The bars of iron stunn'd his brain!
Reeling he fell, with broken limb,
And no one stopp'd to pity him†.

So may they fall whose base intent
Is laid against the innocent:
So may some barrier in the way,
Betwixt the wicked and their prey
Though hid at first from mortal sight,
Prevent the wrong, DEFEND THE RIGHT!

* SPENSER's *Fairy Queen*, Book I., Canto 3.

† That a Hawk *did* lately fly at a Linnet, in a cage which was suspended against the window of a house, in a crowded neighbourhood in the city is a fact. He was taken, and is still living.

THE NATURAL AND CIVIL HISTORY OF CEYLON.

VI. Vegetable Productions.—The Cocoa-Nut Tree.—The Palmyra.—The-Areeka Tree.—The Jaggree Palm.—The Talipat-Tree.—The Cinnamon-Tree.

The most remarkable vegetable productions of Ceylon are the Palms , the Cinnamon-tree, and the tree bearing Eve's-Apple, or the Forbidden-Fruit. Of these I shall give a brief description. The cocoa-nut-tree usually grows to the height of from seventy to eighty feet. It has a sheer, branchless stem, surrounded by annular indentations, the number of which ascertains the age of the tree, as each year an additional circle is produced. The stem is nearly the same size from the root to the top, from which a crest of large pinnated leaves radiates about a yard in breadth, and four yards in length. These leaves are invariably twelve in number, and form a circle, divided from the circumference to the centre, like the spokes of a wheel. The leaf is separated by a strong woody fibre, from which smaller fibres shoot out on either side, exactly opposite to one another, as in the common fern; of these, excellent brooms are made by the natives. The nuts grow in clusters, within the leafy crest, and each tree, when full-grown, produces from two to three dozen. The fibrous husk, which covers the nut, is manufactured into cables and cordage of various descriptions; and these cables have the remarkable quality of suffering no injury from long immersion in salt-water, but on the contrary; are said to be preserved by it.

In Ceylon, this filament, which is called coire, is obtained from a tract of cocoa-nut trees, forming a belt, a hundred and thirty miles long, and one mile and a-half broad, along the south-western coast. It has been calculated that this belt contains between ten and eleven millions of cocoa-nut trees, and produces, besides a vast quantity of oil, six thousand leaguers of arrack, and upwards of three million pounds weight of coire, sufficient to rig twenty first-rate ships of war The produce of a good tree in this belt, has been estimated at from fifty to a hundred cocoa-nuts in the year, each nut, as food, being equivalent to at least three ounces of rice.

From the kernel of the cocoa-nut is extracted a thick oil, used by the natives throughout India, for lighting their houses and anointing their bodies. The shell is converted into ladles. At the top of the tree grows a large shoot, two feet long, and as thick as a man's thigh; commonly called the cocoa-nut cabbage; when boiled, it is an excellent vegetable for the table; but as soon as it is cut off, the trunk gradually perishes. The toddy, from which arrack is distilled, is drawn from this tree; a pot, measuring two quarts, is fixed to a shoot, in which an incision is made at night, and is brought down at sun-rise filled with the exuded sap. The filaments that surround the stem are manufactured into a kind of sackcloth, which is very durable. The wood of the trunk is porous and spongy, and therefore of little value, but it is occasionally employed for pillars to support temporary buildings. The leaves are used for thatching the roofs, and covering the walls, of huts; they are also converted into torches, when dry, and, when fresh, are a favourite food of the elephant.

The Palmyra.

The next most useful of the palms in Ceylon is the palmyra: its manner of growth is similar to that of the cocoa-nut tree; the stem attains nearly the same height, but is more uniformly perpendicular, and the texture of the timber much firmer and more durable. The blacker this is the more valuable, and it has the rare quality of resisting the depredations of insects. The leaves are shorter, harder, and thicker, than those of the tree just described, having the form of an opened fan, as which they are frequently used: upon slips of these leaves all the Cingalese manuscripts are written with an iron style. The fruit of this palm is a firm pulp, about the bigness of a new-born child's head, of a black colour, emitting an agreeable perfume, and containing in its centre, from one to three nuts, about the size of a common plum. The toddy drawn from the palmyra makes better arrack than that extracted from any other palm-tree, and a very good sugar is obtained by mixing the toddy with the pulp of the fruit, and boiling them together. This tree, besides

supplying a valuable wood for exportation, is of the greatest importance to the natives, its fruit and roots being used by them for food, and many other parts being very successfully applied to the purposes of manufacture. The cocoa-nut tree is almost exclusively confined to the southern, and the palmyra to the northern parts of the island, on the coast.

The Areeka-Tree.

The areeka-tree is the smallest of the palms, the stem not being more than a foot in circumference, though it attains to the height of sixty feet. It grows perfectly straight, and the leaves are confined to the top. The nuts, which grow in clusters at the bottom of the leaves, are of an oval shape, and somewhat smaller than those of the palmyra. They resemble nutmegs in consistence, being solid all through, and of a faint white, streaked with red.

One of these trees yields from 300 to 1000 nuts, and some produce 1500. "They bear," says Knox, "but once in the year, generally; but commonly, there are green nuts enough to eat all the year long. The leaves fall off every year, and the skins, upon which they grow, with them. These skins grow upon the body of the tree, and the leaves grow out of them. They also clasp about the buds or blossoms which bear the nuts, and as the buds swell, so this skin cover gives way to them, till at length it falls quite off with the great leaf on it: it is somewhat like leather, and of great use to the country people; it serves them instead of basins to eat their rice in, and when they go a journey, to tie up their provisions; for in these skins or leaves they can tie up any liquid substance, as oil or water, doubling it in the middle and rolling it on the two sides, almost like a purse. Ordinarily, they are about two feet in length, and a foot and a half in breadth. In this country there are no inns, therefore, when people travel, the manner is to carry, ready dressed, what provisions they can, made up in these leaves. The trees within have only a kind of pith, and split easily from one end to the other. The wood is hard and very strong; it is used as laths for houses, and also as rails instead of hedges. Money is not very plentiful in this land; but, by means of these nuts, which are a great commodity to carry to the Coromandel coast, the inhabitants furnish themselves with all things they

want. The common price of nuts, when there is a trade as there was when I came first on this land, is twenty thousand for one dollar; but now (A.D. 1681) they lie and grow, or rot on the ground under the trees."

The Jaggree-Palm.

A FOURTH species of palm is the jaggree, so called from its fertility in the production of sugar. It has the same tall branchless stem as the cocoa-nut tree; but the fruit hangs from the top in straight lines upwards of a yard long, all round the trunk. The leaves are serrated. The nut is about the size of a common marble, and is chewed in every part of India with the betel-leaf. Sago is the pith of this palm, dried and granulated.

The Talipat-Tree.

THE most remarkable of the palm tribe is the talipat-tree, of which a detailed account was given in No. 152 of the *Saturday Magazine*, of which Knox says, "This tree is as big and tall as a ship's mast, and very straight, bearing only leaves, which are of great use and benefit to the inhabitants; one single leaf being so broad and large, that it will cover fifteen or twenty men, and keep them dry when it rains. The leaf, being dried, is very strong and limber, and most wonderfully made for men's convenience to carry along with them: for though this leaf be thus broad when it is open, yet it folds close, like a lady's fan, and then it is no bigger than a man's arm, and extremely light. The people cut them into pieces and carry them in their hands. The whole leaf spread out is round, almost like a circle; but the pieces cut for use are nearly like unto a triangle. They lay them upon their heads as they travel, with the peaked end foremost, which is convenient to make their way through the boughs and thickets. When the sun is vehement they use them to shade themselves from the heat: all soldiers carry them; for besides the benefit of keeping them dry, in case it should rain upon the march, these leaves make their tents to lie under in the night.

"This tree bears no fruit until the last year of its life, and then it comes out on the top, and spreads abroad in great branches, all full first of yellow blossoms, most beautiful to behold, but of a very strong smell; then it comes to a

fruit, round and very hard, as big as our largest cherries but good only for seed to set: and though the tree bears but once, it makes amends, bearing such great abundance, that one tree yields seed enough for a country. If these trees stand near any houses, the smell of the blossom so much annoys the inhabitants, that they, regarding not the seed, forthwith cut them down. The stem has within it a pith only, which is very good to eat, if the tree be cut down before it runs to seed. It is beaten to flour in mortars, and baked into cakes, which taste much like wheat bread. It serves instead of corn before the harvest is ripe."

The Eve's Apple.

This is one of the most remarkable vegetable productions of the island. The tree which bears this singular fruit, grows to the height of from twenty to thirty feet. It has an irregular inelegant stem, with a scanty growth on the lower parts, but on the top the leaves germinate luxuriantly, forming an extensive and graceful crest. The branches shoot upward, though a few strike out horizontally, and these are generally charged with the greatest quantity of fruit. This is a deadly poison, and as if to remove the danger of mischief, Providence seems to have placed it above the reach both of rational and brute animals, as it hangs chiefly upon the crest of the tree, and never grows so low as to be reached from the ground. The trunk is about the size of a man's body, and covered with a dark corrugated bark. The leaves are long and narrow, shaped like those of the bay tree, with a smooth shining surface, the fibres crossing the filament that divides the leaf longitudinally, being strongly marked and regular. The fruit, which hangs from the bough on a long limber stem, about the size of a quill, is shaped something like the large white magnum-bonum plum, somewhat flattened at the extremities, but exhibiting a feature as singular as it is unpleasing. From the upper side it appears precisely as if a portion had been bitten off, and from this circumstance the Mohammedans, who imagine the primitive paradise to have been situated in Ceylon, have called it the forbidden fruit; conceiving that the mark of that breach of the Divine interdiction, which entailed so grievous a curse upon the posterity of Adam, has been

placed by the Almighty upon this singular tree, and that, in consequence of Eve's crime, the fruit was rendered poisonous, in order to secure it from future profanation. The blossom is a white flower something larger than that of the apple-tree, opening into five long pointed leaves, slightly pinnated, and presenting a pod which shoots from the extremity of a capsule, something like that of the common gilly-flower. The fruit is very tempting to the eye, being of a vivid orange on the outside, and looking exceedingly beautiful, as the rays of the sun fall upon its smooth and glowing surface. When cut, the pulp, which is solid and without any stone, is of a deep ardent crimson, but exceedingly acrid when the smallest quantity is placed in contact with the tongue. The Mohammedans of Ceylon formerly expressed great veneration for this tree, and connecting it with the print of Adam's foot on the summit of a mountain in the interior, of which they are very tenacious in their belief, they feel satisfied that this island is the locality of the earthly Paradise. This belief is moreover strengthened by the legend of Adam's bridge, and the tombs of Cain and Abel in the island of Ramisseram.

The Cinnamon-Tree.

The Cinnamon-tree, which is the most profitable vegetable production of this island, is a kind of laurel, growing to the height of from twenty to thirty feet. The trunk is about the size of an ordinary man's body, giving out a great number of large horizontal branches, clothed with thick foliage. The roots, which strike deep into the earth, and spread considerably, are covered with an odoriferous bark on the outside, of a grayish-brown, and on the inside of a reddish hue. Camphor is extracted from them. The stalk of the leaf when chewed, tastes strongly of cinnamon, but is fresher and more juicy The leaves are oval, from four to six inches long, and about three broad, with a smooth surface and plain edge. The blossoms are numerous clusters of small white flowers, about the size of the lilac, which they much resemble. The tree produces a fruit of the form of an acorn, but not larger than a small black currant, and in taste like the juniper-berry. When removed from its socket, it has the shape of an olive, and when dry, becomes a thin shell, containing an oval kernel, no larger than the seed of an apple. If boiled in water, it yields an

oil, which floats on the top, and is used for burning in lamps. As soon as it congeals, it becomes a solid substance like wax, and is formed into candles.

The trees planted for the purpose of obtaining cinnamon, shoot out a great number of branches apparently from the same root, and are not permitted to rise above ten feet. The sprouts which are cut for barking, are about the length and thickness of a common walking-stick.

Those trees which are cultivated, may be reared in the four ways following: from seeds sown during the rains; from shoots cut from large trees; from layers; and by transplanting old stumps. A dry soil and frequent rain is necessary to produce cinnamon of the finest quality. The tree blossoms in the month of January, and it is then that the plantations look most beautiful. In April the fruit is ripe, and soon afterwards the process of decortication begins. May and June are esteemed the best months for this purpose, and are styled the great harvest. November and December are likewise considered favourable months, and are called the little harvest.

In order to ascertain whether the bark is ripe, the peeler strikes his knife obliquely into a branch; if on drawing it out, the bark divides from the wood, the cinnamon has attained its maturity, but if it adhere, it must remain until it be detached from the limbs. The knife employed in peeling, is a small sharp-pointed hook.

When a branch is completely cleared of small shoots and leaves, the cinnamon-peeler, seated on the ground, makes two parallel cuts up and down the length of the bark, which after being gradually loosened with the convex edge of the knife, he strips off in one entire slip, half the circumference of the branch. This slip he passes to a companion, who is seated in a similar manner by his side, with one foot pressed against a piece of wood, from which a round stick slopes towards his waist. Upon this stick he lays the slip of bark, keeps it steady with his other foot, and holding the handle of the knife in one hand, and the point of it in the other, scrapes off the epidermis or superficial cuticle, which is very thin, of a brown colour on the outside and white within. In doing this considerable attention is necessary, for if any of the outer bark remain, it gives a bitter taste to the cinnamon. When this ope

ration nas been performed, the cinnamon is of a pale-yellow colour, and about the thickness of parchment. When spread on mats to dry in the sun, it curls up and becomes darker. The smaller pieces are then inserted into the larger, and, both contracting still closer, assume the form of solid rods. These are tied up into bundles with pliant canes.

When cinnamon is shipped for exportation, a quantity of loose black-pepper is thrown in upon it, which, by attracting the superfluous moisture, preserves and improves the cinnamon, while at the same time its own flavour is improved. Thus the two spices prove mutually beneficial.

The best cinnamon is of a light-brown colour, and does not much exceed the thickness of royal paper. It is of a fine texture, of a smooth surface, and brittle. Its taste is sweet and sharp. The coarse cinnamon is dark, thick, and hard. It has a hot and pungent taste, exciting the tongue, and leaving upon the palate a somewhat acrid bitter.

The quantity of cinnamon sent from Ceylon to England yearly, amounts to four thousand bales, or three hundred and fifty-three thousand pounds weight, for which the India Company pay to the British Government, a stipulated price of sixty thousand pounds sterling, and transport it to England at their own expense.

Oil of cinnamon was formerly made at Columbo, of the fragments and small pieces broken off in packing. A great quantity of this oil is obtained from the coarse cinnamon, which is considered unworthy of exportation in any other shape. Three hundred pounds weight of the bark, are said to yield no more than twenty-four ounces of oil. It is, therefore, necessarily dear, and used commonly to sell at the rate of ten guineas a quart. It is highly esteemed both as a medicine and as a perfume. That of the best quality, extracted from the finer sorts of cinnamon, is of a pale-gold colour, and different from all other oils. Its excellence is determined by its sinking in water. The oil distilled from coarse cinnamon is of a dark-brown hue, and does not sink in water. The wood of the tree, when deprived of the bark, has no smell, and is chiefly used for fuel.

The persons employed in the cultivation and barking of cinnamon, are called Chalias. They are a distinct tribe of people; not the lowest, but almost the poorest of the Cingalese casts. They appear, however, to be contented with

their condition, never repining at its severity. They feel few or no wants, wear no clothing but a coarse bandage round the waist, and live almost in a state of barbarous desuetude. They are governed in the same manner as other casts, by their own officers, over whom is placed an English superintendent, who is looked up to as the chief of the whole tribe. The inhabitants of each district where cinnamon grows, are bound to deliver yearly, a certain quantity ready prepared for the market. Upon which condition they are allowed to have gardens and pieces of land rent free, besides enjoying other privileges. They likewise obtain additional remuneration, sometimes in rice, and sometimes in money, according to the time and labour employed by them in the public service. Every individual is obliged to furnish a stated proportion of cinnamon in the season; and if any one deliver a larger quantity than what is required of him by the stipulation of the British Government, he draws extra payment for the surplus portion

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With whatever subject men are desirous of being acquainted, they must, of necessity, study the elements of it, and have recourse to those sources from whence information is to be drawn. Neglect of this, so obvious a course of proceeding, cannot but leave them in ignorance of the subject. The truth of this maxim is incontrovertible, and it is as applicable to religion as to all the other concerns of life. Neither religious knowledge, nor any other knowledge, comes by intuition; but it is the result of a careful application of the means which God has provided for our instruction. One of these means, with respect, that is, to religious knowledge, is the study of the Scriptures. Disregard of this salutary provision leaves some men in a state of infidelity, and others, who profess and call themselves Christians, in a state of most deplorable ignorance as to the foundation and the articles of their professed belief; whereas, would men but give that attention to the subject which its paramount importance demands, availing themselves withal of those assistances towards understanding the Scriptures with which the providence of God has furnished them, they could hardly be destitute of a Christian hope, or of the power of "giving an answer to every man that asketh them a reason of the hope that is in them."
—Bishop Mant.

CORMORANTS

If we consider the matter seriously, we must be persuaded that squandering and dissipation of our time is a sin of a very heinous nature. Nothing, I think ought to be more offensive to a Christian ear than such complaints as we commonly hear of the heaviness with which the time passes,—wishes that it would fly more quickly,—avowed adoption of trifling pursuits for the purpose of cheating its tediousness, and the like. We hear time spoken of in this "foolish jesting which is not convenient," by the name of "the enemy." Men speak of "killing it," as if to kill time were not a kind of suicide.

SKETCHES OF THE HIGHLANDS AND ISLANDS OF SCOTLAND

SHIANT ISLES; LEWIS; LOCHS.

(A. D. 1827. Sept.)

The southern and western sides of the Shiant Islands exhibit little of the basaltic formation. The perfect stillness of the water afforded us a good opportunity of witnessing the mode in which the Soland goose, the albatross of the northern seas, drops for fish. Towering to a great height, the bird folds its wings, and descends, head-foremost, with prodigious velocity into the water, which resounds as if a large stone had fallen into it, and recovers its smoothness before the bird re-appears, usually bringing a fish in its beak. The Soland goose destroys a great quantity of herrings. The head, neck, and shoulders of this bird are exceedingly tough and strong; so much so as to resist all small shot, but slugs or swan. The cormorant is equally thick-skinned, and extremely full of blood, of which the natives of the Hebrides are said to make a soup, somewhat resembling hare-soup, the standard dish of the eastern coast of Scotland, little known on the western, on account of the rarity of hares. It is remarkable that hares were unknown on the western coast of Scotland, till their migration to it was facilitated by the military roads. The cormorant is

said to have been anciently used in Scotland as a whet to the appetite before dinner. The young of the kittywake gull was eaten for the same purpose.

We met, on returning to the coast, a large wherry proceeding to the islands, to convey the shepherd and his family away after the harvest. No one can be prevailed on to reside there. A former shepherd lost his wife, a son, and daughter, at different times, by their falling over precipices.

Touching at Loch Brolum, we coasted Lewis, to Loch Shiell, and proceeded to the inn, a neat slated house. To our dismay, as we had consumed our original stock of provisions, we found, save a bowl of excessively sour milk, the negative catalogue complete. We were assured, moreover, that not even oat-cake could be procured in any of the cottages in the neighbourhood: and that as to whisky, it was not to be found in the whole country. The latter statement was very questionable. The boatmen, to whom we had promised whisky, expressed no disappointment at not meeting with it, doubtless well prepared for the denial, and returned without a murmur to Valamis. We had before us a walk of several hours; and it was already evening. A guide offered his services, professing knowledge of the track: but as we advanced he became bewildered by the multitude of lakes and the multifarious gleaming of the water, which at first served to direct his course, and at length was brought to a stand-still, by an arm of the sea, along the rugged shore of which he led us scrambling on, till we stumbled upon a cottage half buried in the ground, when he discovered where he was. The inmate, being summoned, instantly sprung from his bed, satisfied our craving appetite with a bowl of delicious milk, launched a boat, and conveyed us across Loch Eisort amidst a blaze of phosphoric light. A single light on the opposite shore served as our beacon, and comforted us with the assurance, that though the time had advanced an hour beyond midnight, some one was yet watching in the manse of our old friend, the Minister of Lochs. On our arrival, we found his daughter prepared to receive us, and a

table laden with viands, the ample remnants of a supper of which some Irish gentlemen, who had been fishing in the neighbourhood, had already partaken, and which were reserved in the event of our coming; for the arrival of a guest, in Scotland, is welcome at any hour. The minister met us at breakfast next morning, and expressed great indignation at the reception which we experienced at Loch Shiell.

LOCH TUA; GRACE, CAVES; LOCH BERNERA; CALERNISH; STONE CIRCLES.

To the north of Stornaway are some natural phenomena well worth visiting. We proceeded to these along the shore of Loch Tua or Broad Bay, on the north side of the Aird, a safe roadstead for shipping, to the farm-house of Grace, which has been occupied by the present tenant and his ancestors for 200 years. A neighbouring creek presents an extraordinary natural wall of rock of little breadth, seemingly of artificial construction, emerging from a bed of plum-pudding stone, the material of which the coast is chiefly composed, and disappearing in the sea. The existence of a corresponding stratification on the opposite coast of Scotland, of which I was assured, would indicate its extension to a distance of at least forty miles. The other wonders of this part of the coast are two caves, the larger of which, being accessible only at the spring ebb, we could not enter. The smaller is deep, lofty, and spacious: we appeared to each other but pigmies, standing at opposite extremities of it. Its sides are incrusted with stalactical frost-work of variegated colours, in some places assuming, as in the cave of Strath Aird, the columnar form. The other is said to be superior to this, not only in size, but in the splendour of its sparry decorations. These caves still afford a retreat to seals and sea-otters: but the number of these animals has been greatly diminished by the unrelenting warfare waged against them.

To the northward of Grace the coast becomes bolder, and terminates in the long and narrow promontory of Tolsta Head. Near this point are an old tower, the scene of a

traditionary tale; and a cairn, the tomb of a Norwegian princess. The hills in this neighbourhood yield deer. Lewis, Sky, and Jura, are the only three Scottish islands in which these animals are still found. Dr. Clarke informs us that they were extirpated in Rum by the eagles, some years before his visit. They existed in Mull at the time of the statistical survey. The destruction of the copse which supplied cover to the fawns, is assigned as one cause of their disappearance.

The western coast of Lewis is deeply indented by Loch Bernera. The rocky shores and surface of this arm of the sea, sprinkled with numerous groups of islands, appear in long and picturesque perspective, whilst the hills of the southern district of Lewis finely bound the spreading branches of the bay. Near its shore are some interesting monuments, of the kind commonly called Druidical: the remains of three stone circles. The principal, and by far the most perfect of them, one of the most remarkable in form and extent in the British Isles, stands on the brow of a promontory overhanging the bay, striking the eye at a considerable distance, like a cemetery of thickly-clustered tomb-stones. It has been visited by Martin and Macculloch. To the latter we are indebted for the following description of it.

"The general aspect of this structure is that of a cross, nearly of the proportions of the Roman crucifix, with a circle at the intersection. But a nearer inspection discovers more than is essential to that form. The largest line lies in a direction of about twenty-four degrees west of the true meridian, or pretty nearly in that of the magnetic variation at present, which is therefore the general bearing of the work. Great stones intermixed with some that have fallen, and with blank spaces whence they may have been removed, or where more probably they are covered by the soil, are found along this line for the space of 588 feet, including the circle; their number amounting to fourteen, and eleven of them being still erect. If we were allowed to fill up the blanks according to the general proportions of the intervals between those that remain, the number would be twenty

within that distance. But following the direction of this line further on, there are indications of other stones, all of them fallen, and nearly covered by earth and vegetation, that would justify us in extending it ninety feet, or more, further, thus making the total length about 680 feet. Parallel to the long leg of the cross, and to that only, is another line, now far less perfect than the first, since it contains only three erect and seven fallen stones, and reaches, as far as I could discover, only to 480 feet. Thus these two lines may be conceived to form a sort of avenue to the circular enclosure; its breadth being exactly equal to a semi-diameter of the circle, as the additional line touches the edge of this. The shorter line of the cross, at right angles to the other, now measures 204 feet, including the circle: but as it is longer on one side than the other, its original length has probably been greater, though I was unable to detect any traces of fallen stones; the progress of some enclosures having here interfered with the integrity of the work. This line contains ten erect stones. The diameter of the circle is sixty-three feet from north to south, and sixty-two from east to west, and it contains fourteen erect stones in the circumference, with one in the centre. This central stone is twelve feet high; one near the end of the long line measures thirteen, a few are found reaching to seven or eight, but the height of the greater number does not exceed four.

The intervals between the stones vary from two to ten yards, but the larger ones are probably the consequence of the loss of those which once occupied these places. I ought to add that the total number of stones which I could discover, either erect or recently fallen, is forty-eight; and that if the whole rank were complete, as it appears originally to have been built, they would amount to sixty-five or sixty-six." My measurements did not entirely coincide with those here stated: but on the whole they are doubtless accurate. The recent removal of the peat-moss, in which the stones are half buried, from the sides of one of them, exhibits not only the surprising growth of this vegetable production, on a height where it could not receive any alluvial contributions, or deposit of extraneous decayed vegetable matter, but also the method employed by the rude architects who erected them, to fix them on those

bases on which they have remained unmoved for centuries. The stone is inserted in a hole, filled up with small loose fragments of the same material. The elevation of the stones of the central circle must have amounted to thirty feet above the ground. Where exposed to view, the substance is as white as a bleached bone, contrasting singularly with the "gray" hue produced by the atmosphere.

The fanciful conjecture of Toland respecting this structure, which I have read detailed in an Encyclopædia, is ridiculed by Dr. Macculloch. The circular or oval form of these edifices was selected, no doubt, as best adapted to the purpose for which they were erected, and not with reference to the signs of the zodiac, as the number of stones in the circle varies indefinitely. The extensive appendage to the circle at Calernish, which distinguishes it from other circles, consists of the four avenues of stones directed towards it, from the four principal points of the compass, and is also so simply constructed that its origin may be accounted for without imputing to the architect an astronomical design exhibited in no other structure of the same kind. The other two circles in the neighbourhood are composed of much smaller stones; one is incomplete, the other has a double row still standing, and arranged in an oval form. The people have no tradition respecting them.

Doubtless, while the world lasts, Stonehenge and all similar remains of antiquity will be commonly attributed to the Druids. Yet they are found in countries, such as the Scandinavian, and in Scotland, where it does not appear that the Druids were known. Of the Druids, we have no information except from the Roman writers, who state that their chief seats were in Gaul and Great Britain, and that they worshipped exclusively in groves. The monuments of antiquity miscalled Druidical, were clearly constructed for all public purposes, whether legislative, judicial, festal, or sepulchral; and consequently vary much in form and dimensions. A copious account of those existing in Sweden, illustrated by numerous engravings, has been published at Stockholm, by M. Siöborg, the principal antiquary of that country, but unfortunately in his native language, which is little known beyond his own country. One of those described by him is remarkable, as the stones of which it is

composed, are arranged in the shape of a vessel, some of them representing the position of the masts;—indicating the burial-place of a celebrated pirate.

That the remains in Scotland were of Scandinavian origin, there can be little doubt, the probability being heightened by the circumstance of their being found chiefly on the coasts and islands which were most frequented by the Danes and Norwegians. Pennant took for granted that they were Druidical, and under the influence of this prepossession, found in the immediate vicinity of one which he examined on the main-land, the residence of the Arch-Druid. "The Druids undoubtedly possessed Iona, before the introduction of Christianity. A green eminence close to the Sound of Iona, is to this day called the Druids' burial-place*. A cottager, some years ago, planting potatoes in this spot, and digging earth to cover them, brought up some bones which the people of the island immediately concluded to be the bones of the Druids: the tradition is, that the first Christians banished the Druids, and took possession of their seat. The Druids also had a temple on the head of Loch Swidain in a farm called Rossal. The temple is but small, and several of the stones have fallen down. Here, as the name of the place indicates, they held courts of justice."—*Statistical Survey.*

Borlase and others attribute the famous rocking-stone in Cornwall to the mechanical skill of the same sages; and discover in the granite blocks, of which a hill near Penzance consists, their instruments of worship and magic. As well might the construction of the Land's End, which is composed of similar materials, and put together in a similar fashion, be ascribed to them. The Druids may possibly have erected some of the remains in Britain, and in France: the existence of such monuments in the latter country, though most of them have been probably destroyed, being proved by the large one still standing near Quiberon Bay, and another near Orléans. The most perfect extant was perhaps that discovered in Jersey, which is now preserved at Park Place, near Henley-upon-Thames, having been presented by the inhabitants of that island to Marshal Cornway, the governor.

The improbability of the Druids having built in countries where they cannot be supposed to have existed, needs not the refutation implied in an improbability of an opposite import, that they should not adopt the rude style of architecture common in the age in which they lived. It is possible that Stonehenge may have been raised by the Druids, whilst the similar remains in Scotland must be referred to architects of later date, and less dubious celebrity. Dr. Macculloch opposes the exclusive claims of the Druids with his usual ability

* *Claodh nan Druineach* signifies the Druids' burial-place.

SOLAND GOOSE.

DURING my stay at Stornaway, I received an invitation to attend the funeral of a wealthy old lady, who had made numerous and liberal bequests. She was sister of Colonel Colin Mackenzie, who long held with considerable reputation the office of Surveyor General of India. Immediately after the decease of this lady, a cask of Madeira was opened in her house, a wake had been kept up, and the house nightly illuminated according to the custom of the country. The chief-mourner, who arrived in an open boat from the main-land, was a minister, and the funeral was attended by all the principal inhabitants of Stornaway. Our party from the lodge arrived too late at the house of the deceased to partake of the preliminary refreshments, but we overtook the procession on the road to the ancient cemetery of Stornaway, which is situated on the beach of Broad Bay, about four miles from the town. Another burial-place used by the people of Stornaway, near the town, has been so encroached upon by the ravages of the sea, that the bodies will probably soon be consigned to a watery grave.

An old chapel, the larger half of which is unroofed, stands in the cemetery. Beneath a flagstone on the pavement, undistinguished by any inscription, lies the body of the last Earl of Seaforth, who forfeited his title in consequence of his participation in the rebellion of 1715, and lived and died afterwards in a species of exile in Stornaway. The loyalty of succeeding generations has purged the attainder which attached to the rebellious ancestors of many of the noble families of Scotland, and the restoration of the forfeited titles must be regarded with unmingled satisfaction. But great difficulties must embarrass the exertion of the royal prerogative, arising from the separation of the hereditary estates from the line upon which the title would now devolve, the difficulty of preserving the descent, the existence of collateral heirs alone, and other perplexing circumstances. There are other monuments of the Mackenzies of Seaforth, some of which bear the family crest, the stag's horns, assumed by an ancestor who saved the life of Malcolm king of Scotland, whilst hunting, from the attack of a stag, an achievement which

forms the subject of one of West's finest paintings. The unroofed part of the chapel contains the tombs of nineteen of the Macleods, the ancient proprietors of the island: a warrior in armour is represented upon one of them in basso-relievo. The graves of the principal families are enclosed by four walls forming a sort of mausoleum. That of the lady whose obsequies we were celebrating, contains a marble monument to the memory of Colonel Colin Mackenzie, bearing a highly panegyrical inscription. Stornaway, in which town he filled the office of Inspector of the Customs, is proud of his fame. The Duke of Wellington is reported at Stornaway to have said at Badajoz, when some difficulties obstructed the progress of the siege, "Oh, that old Mackenzie were here!"

In Scotland, the funeral ceremony is celebrated without any religious rite. The minister of the parish attends only when invited, and not officially. He sometimes embraces the solemn opportunity of offering up a prayer among the assembled mourners at the house of the deceased, previous to the departure of the procession, though he may not accompany it. On the present occasion, as soon as we reached the cemetery, the coffin was deposited in the grave with all possible decency, and the whole body of mourners instantly adjourned to a tent pitched in the cemetery, within a few yards of the mausoleum, where we found tables groaning beneath a plentiful repast. As soon as we were all arranged, 120 in number, the minister, who presided as chief-mourner, delivered a grace in the form of a prayer; and the minister of the parish offered up another, accompanied by thanksgiving after dinner. The bottle was then circulated, and many loyal, patriotic, and complimentary toasts, including the *Church of England*, and the *Kirk of Scotland*, followed: nor was the *memory of the deceased* forgotten, whilst the toasts

† The estates forfeited after the Rebellion of 1745 were vested in the Crown, and afterwards unalienably annexed, and the rents and profits appropriated to the improvement of the Highlands and prevention of disorders. In 1784 they were restored, on condition of the grantees paying back the amount of the debt upon them discharged by government; and the fund thus placed at the disposal of government was dedicated to economical moral and religious purposes in Scotland.—See *Report of Commissioners on Forfeited Estates.*

were as usual accompanied with appropriate speeches. The presence of several ministers, and one acting as chairman, no doubt tended to preserve a certain degree of sobriety in the midst of revelry and merriment, inseparable from such a meeting, as the occasion would be necessarily speedily forgotten by the greater part present. But at length the chord was touched, to which the bosoms of the Islanders responded, amidst the flow of wine and whisky, with resistless accordance. "The chief of the Macivers" was proposed amidst loud applause. The guests became now quite tumultuous, and the Rev. Chairman immediately rose up and left the tent, accompanied by nearly all the party. The expectation of the gleanings of so plenteous a repast had attracted to the spot a multitude of people of all ages, who thronged around and closed in upon the tent, eager for the signal for rushing in upon the remains of the feast. A man was constantly employed in walking round the tent, armed with a long whip, with which he inflicted perpetual, but almost fruitless, chastisement on intruders.

A few of the guests, who had not heeded the example of the chairman, continued long carousing, and one of them was brought to Stornaway on the bier which conveyed the body to the grave. A Highland laird, to whom I afterwards mentioned the circumstance, observed that he was "a very lucky fellow to get so good a berth." The festivities were, however, attended with much less excess and confusion than occur frequently on such occasions. Such disorderly proceedings are happily growing into disuse, and the beneficial example afforded more recently at the funerals of the celebrated Glengarry and the late Duke of Gordon, has tended to accelerate the reform.

While on this topic, I may mention the following circumstances which occurred at the cemetery of Assynt, which were narrated to me by a gentleman present. The habitation of the deceased was distant from the place of interment. The body was borne on men's shoulders during part of the journey, and then conveyed in a boat over the lake. The bearers became so drunk by frequent recourse to the whisky, that at length there was scarcely found a sufficient number of persons sober enough to deposit the coffin in the boat, many of the attendants being drunk when they left the house of the deceased. When they

reached the shore, the body was forgotten, and a detachment was sent in quest of it, after a numerous muster had been made in the churchyard, and the cause of the delay which prevented the last act of the ceremony was ascertained. But the collection of a multitude of fiery spirits, heated by intoxicating liquors, was attended by its probable consequences. The sexton happened to cast up, whilst digging the grave, a large thigh bone, which proved in very deed a bone of contention. On the northern shore of Loch Assynt, contiguous to each other, stood an old castle and a mansion-house, in which resided formerly two families, Mackenzies and Macdonalds, between whom a violent feud subsisted. The bone was of such large size that the Mackenzies claimed it as having belonged to one of their race, a man of gigantic stature. This point was, however disputed by the other party, and a desperate fight ensued. My informant, who was a boy, took refuge inside the church to avoid the fray of the combatants, and surveyed the battle from the window. But he had reason to rue the choice which he had made of his asylum, for some wag locked the door and carried off the key, and he spent the night in his prison.

At the more recent funeral of a distinguished officer, a large body of Highlanders assembled. A man of the country, pointing out to me the place of interment, spoke of the circumstance with characteristic animation: "Oh sir, it was a grand entertainment, there were five thousand Highlanders present: we were very jolly: some did not quit the spot till next morning, some not till the day following; they lay drinking on the ground: it was like a field of battle!"

At a late interment in Ross-shire, the mourners engaged in a general row, and the loss of lives was the result, a consequence by no means uncommon. Dr. Macculloch mentions that it was matter of boasting, that at one funeral a pipe and a half of whisky had been drunk.

So inseparably blended in the mind of the Highlanders are the funeral and festal preparations, that a worthy minister of a small island directed that the cakes and other ingredients of the banquet, sent to him from Campbelltown in Argyleshire, should be packed in the coffin destined for his wife. A gentleman who purchased an estate in Inverness-shire, being present at a funeral soon

after taking possession of it, commended some excellent wheaten bread which was served at the entertainment, and asked his host, the son of the lady whose obsequies they were celebrating, whence it came. "It was brought with the hearse, with my mother's body from Inverness!" was the reply. Years elapsed, my informant assured me, before he lost the taste of that wheaten bread.

The festal celebration does not terminate with the funeral, but is sometimes prolonged during weeks. At Campbelltown I found a widow-lady, who had buried her husband some weeks before, still keeping open house, providing every evening refreshment for visiters, and expecting that all her neighbours, not only those of the town but of the country, should in turn pay the customary respects. The expenses incurred on these occasions, are often, as it may be supposed, very onerous, and among the poor often involve families in the severest distress, for they will submit to any sacrifice to secure a decent interment for a relative.

Whence arises, it may be asked, revelry so utterly at variance with the feelings of awe or sorrow naturally excited by death and its solemn accompaniments? It cannot be attributed to the levity of the people, because none are accustomed to regard death with more habitual seriousness than the natives of these regions. The thought or mention of his inevitable doom is not discarded by the Scottish Highlander with affected contempt or inconsiderate levity, but entertained with becoming solemnity: and particular customs confirm this natural disposition, one of which is that of the bride considering it to be one of her first duties after marriage, to prepare her winding-sheet for her interment. Nor does it proceed from deficiency of relative attachment, because the Highlanders are strongly actuated by this principle; and the very anxiety to provide an entertainment suitable to the rank or family of the deceased results from its operation. Nay, it is often indulged at the expense of personal feeling, as well as considerable cost, for the relative merges his own grief in the desire of bestowing appropriate honour on the deceased; and so far was this devotion formerly carried, that the nearest of kin opened the funeral ball on the night after the death. A laird, to whom I was speaking of the noted attachment borne to a neighbouring landlord by his tenants, observed, "True, but they will, nevertheless, all get drunk at his funeral."

Are we then to seek a cause for such inconsistency of

conduct in the single circumstance of providing a banquet on funeral occasions, in conformity to very ancient practice? "For the comfort of them whose minds are through natural affection pensive in such cases, no man," observes Hooker, "can justly mislike the custom which the Jews had to end their burials with funeral banquets, in reference whereunto the prophet Jeremy spake concerning the people, whom God had appointed unto a grievous manner of destruction, saying, 'that men should not give them the cup of consolation to drink for their father or their mother*,' because it shall not be now with thee as in peaceable times with others, who bringing their ancestors unto the grave with weeping eyes, have, notwithstanding, means wherewith to be re-comforted. 'Give wine,' saith Solomon, 'unto those that have grief of heart†.'"—*Ecclesiastical Polity*, v. 75.

The ancient Scandinavians celebrated the entrance into life with mourning, and the departure out of it with rejoicing‡. In Scotland the dance has been discontinued, and the bagpipe is no longer used at funerals. General Stewart says, that the last time a piper officiated on such an occasion in Perthshire, was in 1736, at the funeral of Rob Roy. But the custom was recently revived at that of the late Roman Catholic Bishop of the western district in the island of Lismore, in compliance with his dying request, in strict conformity with his character, which was that of a genuine Highlander.

The illumination of the house immediately after the decease and the late wake, may be doubtless partly attributed to the superstitious notion of chasing evil spirits from the corpse.

The funereal banquet in Scotland is now strictly limited to the provision of entertainment for the assembled mourners, whether terminating on the occasion itself, or prolonged for a considerable period, so as to enable all persons so disposed to pay their tribute of respect to the memory of the deceased. The practice unabused is unobjectionable, nay necessary. The mourners are often brought from remote parts, performing laborious journeys, or encountering winds and waves, to reach the place of interment, a spot frequently selected on account of its central situation, or the ancient veneration attached to it, and very

* Jeremiah xvi. 7. † Proverbs xxxi. 6.

‡ "Puerperia luctu, funeraque festivo cantu concelebrantes."—Olaus.

far from any place of refreshment; they cannot be dismissed without it; and although the cemetery itself is unsuited for a repast, yet its immediate neighbourhood is often unavoidably chosen for the purpose. The censure belongs to the extravagance, wasteful, and sometimes ruinous: to the excess which converts the funereal banquet into a scene of mirth, disorder, and violence, and renders the serious mind of the natives of these regions less susceptible of the impression of death on the very occasion of its celebration than on any other. The excess is partly produced by the inebriating quality of the beverage resorted to on these occasions; but is doubtless to be attributed principally to the want of an adequate preventive, a burial-service, such as is used by some of the Reformed Churches on the continent, or more especially like that of the Church of England, repelling mirth and levity by the awful and affecting solemnity with which it "commits the body to the ground, earth to earth, ashes to ashes, dust to dust," whilst it represses immoderate grief, by lifting the dejected spirit of the mourner to "the sure and certain hope of the resurrection of the life to come."

The abuse of burial-grounds, already adverted to, may be traced partly to the same source. As they are not consecrated, they are usually selected from the convenience of the situation, and often for the exclusive use of a particular family, independently of those which ancient respect has hallowed, and are consequently very numerous, and liable occasionally to very great neglect. The want of proper feeling respecting them even in towns, may be inferred from the state of the churchyard around the cathedral of Dornoch, described in the *Statistical Survey*, as being "without any fence, and in the centre of the burgh. It is the market-place. The country round runs through it." Yet to this cemetery the people are particularly attached. "Some years ago," proceeds the same account, "the heritors of the parish and magistrates of the burgh, entered into a resolution to prohibit all further burying there. A piece of ground without the town was accordingly marked out for that use. A day was fixed, beyond which no person was to be admitted to the old ground, and public intimations to that purpose repeatedly

made. But the prejudices of the people prevailed, and the project was relinquished."

The neglect of cemeteries dates probably from the period at which their consecration and the use of funeral rites were discontinued, for the ancient practice of the people was very different, as is proved by the sculptured monuments which still adorn the old cemeteries, the custom of placing a stone on the cairn, and other memorials. There is a Gaelic phrase signifying, "If I be alive after your death, I will carefully lay a stone on your cairn."—*Statistical Survey.* The cairns or heaps of stones in the form of a cone, and other sepulchral remains, are traditionally reported to have been piled up for the purpose of protecting the bodies which they covered from the voracity of wolves, which abounded once in Scotland. These animals, unfortunately for the repose of the dead, disappeared about two centuries ago, the last having been killed, as we are informed in the *Tales of my Grandfather*, by Cameron of Lochiel, during the Civil Wars.

Dr. Macculloch makes some judicious observations on the subject: and he contrasts the respect manifested by the Welsh for their funereal repositories with the neglect of their kindred Celts of the North. The comparison with another division of the same race, the Irish, might have proved less disadvantageous to the Highlanders; for the very veneration for ancient burial-grounds has produced amongst this people treatment scarcely less reprehensible. They continue to use them, after they have been choked up with bodies, and thus convert cemeteries, and even the ruined churches which they usually surround, into charnel-houses, exhibiting the most ghastly spectacle of broken coffins, piles of sculls and bones disinterred, to provide room for fresh bodies.

The cemetery of Mucruss Abbey may recur to the remembrance of those who have visited Killarney. Well may the place be regarded with such awe that no native of that country will visit it after sunset, unless fortified, as in the instance of one person whom I met with on the lake, by the conviction, that his ancestors, having been buried in it for many generations, would turn out in his defence, should other ghosts attempt to injure him.

Crime is unfrequent in Lewis. The lock-up house in Stornaway is little required. In regard to morals, it may be asserted, respecting the natives of the Highlands and Islands in general, that notwithstanding occasional excess, sobriety and chastity prevail amongst them. Restraints to the free use of spirits are supplied by poverty by regard to the maintenance of parents or children, and the assistance of relations and neighbours, which in these regions is unchecked by the operation of poor-laws*, and by the little facility or temptation afforded to assemblages for drinking, by shops for the sale of spirits. Where the operation of these restraints ceases, the practice is indulged chiefly at public meetings, fairs, and funerals; and the rare occurrence of the latter may partly account for the extent to which it proceeds. Yet, even in these, the habitual characteristic sobriety of the Highlander's deportment often belies the copiousness of his potations, and he will preserve the most perfect decorum under the influence of a quantity of spirits which would render an Irishman frantic. "The Irish," said Sir Jonah Barrington, "are drunk before dinner, and mad after it." "Always drinking, and never drunk," is, on the contrary, the maxim of the most intemperate Highlanders.

Instances of habitual intoxication among the yeomanry, and even of those whose example is of far more extensive consequence, it cannot be denied, may be occasionally met with. A change of wind had nearly, at one time, introduced me to the hospitality of a gentleman, residing in an island, who, at the age of 60, had persevered, for several years, in the habit of quaffing two bottles of whisky per day! The better classes became habituated to this fiery and poisonous drug by the unfortunate custom, still very prevalent in the North, of taking a glass of it as a dram before breakfast. I found it the invariable practice at all the houses, whether of clergymen or sheep-farmers, in the western parts of Sutherlandshire, in which I breakfasted; and frequently witnessed the most simple and undissembled astonishment at my not complying with it. Nay, in the northern counties, it is no uncommon thing to see ladies

toss off a glass of whisky at the early time in question, but under the less-startling designation of *bitters*, which it assumes when administered to female lips.

Whisky follows the Highlander from the cradle to the grave, and often accelerates his progress from the one to the other, before he can exercise the discretionary power of refusing it. It is administered to the child immediately after its birth, and invariably, and often fatally, in the measles, the people imagining that it keeps the disorder "out of the heart." The measles were raging in Stornaway and in Orkney during my tour; in the former it was calculated that about 40 children had fallen victims to this ardent medicine. In Orkney, the clergy were seconding, but in vain, the endeavours of the medical men to counteract this baneful custom. It prevails very generally in England.

The traveller, after several hours of exposure to heavy rain, and perhaps a rough sea, has no reason to quarrel with a glass of *whisky toddy*, but he has often to be annoyed by the exhortations and provocations to the repetition of the dose which occasionally assail him; his host forgetting that *compulsory feeding*, whether in the article of meat or drink, is a decided breach of hospitality, as well as of good breeding. He seems too often to consider the national, as well as individual honour, implicated in his guest's surrender of his reason, and sacrifice of personal comfort, and the persevering, "You'll be the better of a little," is resorted to where a summary appeal to the usage of the land is ineffectual. Many a young Englishman has had ample occasion to rue his visits to the Highlands of Scotland, as having betrayed him to the use of spirits, which he perhaps scarcely ever tasted in his own country, but to which he has been led by the example and encouragement of his hosts, and by the supposed necessity of conforming to the *presumed custom* of the country. The habit formed in the invigorating and inspiring atmosphere of the mountains, itself the *elixir vitæ*, has been perpetuated to the injury of his health and the abridgment of his life. Few who have passed much time in the Highlands will hesitate to acknowledge that this statement is

* Notice will here after be taken of the *assessments*, corresponding to the English rate, which are gradually spreading northward from the Lowlands.

not overcharged. But in no respect, perhaps, has the present age surpassed that which preceded it in the progress of improvement, more than in its emancipation from the barbarous and brutal custom of *compulsory drinking*.

The importation of smuggled foreign spirits into Lewis is much counteracted by the vessels belonging to the Revenue Service, which cruise constantly along the coast, and are very active in procuring information. These vessels are dreaded by the traders, who are obliged to come to, and to submit to be searched, often losing their passage by the detention, or by being compelled to postpone their entrance into the harbour to another tide. Serious altercations perpetually occur between them. The evils of this system seem to justify the preference of that of the Preventive Service as introduced now along the southern English coast. The importation of foreign spirits into Lewis is almost entirely carried on by vessels of other nations, particularly the Norwegian, which procure them in France, and being permitted to land them under bond for exportation, contrive to sell them to the inhabitants. The foreign spirit chiefly imported is gin, but whisky is the favourite beverage; and, as there has been hitherto no legal distillery, it is principally the produce of illicit distillation.

The Excise is utterly inefficient. The officers now and then set out upon an excursion, and do by chance, sometimes, stumble upon a still, when they meet with no opposition; as the islanders imagine, that the ill treatment of an Excise-officer would probably lead to the quartering amongst them of a detachment of troops. So openly do the people admit the practice of illicit distillation in their festal hours, that they ask their guests, and my informer was an officer of the Navy, belonging to the Revenue Service, to whom the question had been often put, whether they prefer *Coll* or *Grace;* whisky of those farms having been celebrated. A more numerous and vigorous excise is indispensable, and a cheap legal supply of spirits a needful preliminary to coercive measures. For this purpose, Mr. Stewart Mackenzie has adopted the plan which has been successfully pursued by the Duke of Sutherland, by some of the proprietors in the Orkneys, by Mr. Campbell of Isla, and others, of erecting a distillery.

The morality and expediency of this method of extirpating the illicit distillation have been questioned. Its efficacy, notwithstanding the preference of the people to the illegal whisky, which being made in smaller worms is of finer quality, has been proved by experience. Those who push the principle adopted, and most beneficially, by the Temperance Societies to an extent further than the very regulations of those admirable institutions will warrant*, may denounce any compromise with spirits as unjustifiable, and insist upon the total disuse of them.

Experience, the result whether of choice or of necessity, has invariably ratified the opinion of medical practitioners, respecting the mischievous effects of drinking ardent spirits, both physical and social, and has strengthened the conclusion that a total abstinence from them, except medicinally, occasionally in sickness or decrepitude, or even after severe labour or exposure, promotes the health, as well as the comfort and happiness of a people. We must be careful, however, not to argue against the use of God's good gifts from the abuse to which they are liable. Our very Temperance Societies provide a salvo for the moderate use of spirits upon this principle. A legal supply of this beverage is therefore not intrinsically immoral or irreligious; and experience has proved its tendency to supersede the illicit supply, whether by distillation or importation, and therefore to extirpate all those evils, indolence, crime, profligacy, and disregard of constitutional authorities, involved in the infraction of the laws. The confirmed habits of smuggling which the people of Lewis have acquired, inclined them to predict the failure of the distillery at Stornaway. Yet it has been so successful that another has been since erected on the opposite coast of the island. How far the legal supply of spirits, coupled with the reduction of duty on the spirits brought to charge, have tended to supersede smuggled spirits, may be inferred from the statement made by Lord Althorp, in the House of Commons last year.

* As a specimen of some of the ultra manifestoes put forth under the implied sanction of the Society referred to, in defiance of its own avowed principle, it has been declared that the success of the Institution cannot be expected till spirits are prohibited, even as a *medicine*. "Defend me from my friends," is a petition which cannot be too frequently on the lips of the supporters of those magnificent philanthropic and religious institutions which form a distinguishing feature of this age and of this country.

Before 1825	Duty in Scotland on Imperial gallon..	*s.* 6	*d.* 2	Average brought to charge under that rate..	No of Gals.	3,158,200
In 1825	Ditto reduced to	2	4¾	Ditto	ditto	4,324,322
In 1826	Ditto	—		Ditto	ditto	5,950,941
In 1827	Ditto raised to	2	10	Ditto	ditto	3,985,000
In 1828	Ditto	—		Ditto	ditto	4,752,000
In 1829	Ditto	—		Ditto	ditto	5,695,000
In 1830	Ditto	—		Ditto	ditto	5,756,000
In 1831	Ditto raised to	3	4	Ditto	ditto	5,992,421
In 1832	Ditto	—		Ditto	ditto	5,691,000
In 1833	Ditto	—		Ditto	ditto	5,401,000
In 1834	Number of Gallons increasing†.					

The usual arguments which I have heard strenuously urged in Lewis, and other parts of Scotland, in behalf of illicit distillation, and more especially addressed to the landlords, is that it ensures to them the payment of their rent, and that without the means which it affords to the tenant, that payment would not be effected. This statement has been made to me, coupled with a general and entire negation of the existence of the practice in question. The motives which prompted it were more intelligible than the logic. The shadow of reason, which attaches to the statement itself, is borrowed from an earlier state of things, before roads were made, and when, consequently, the landlords could not send the produce of their lands, in a bulky shape, to market. Their connivance at the illicit distillation of spirits by the tenants, receiving compensation in the higher ratio of rent, might be therefore apparently expedient in an economical point of view. This practice, it may be observed, contributed to rivet in the breasts of the Highlanders, that aversion to roads which characterized them almost up to the period of the *Statistical Survey*.

The improved access to markets, and generally and principally the erection of distilleries in the immediate neighbourhood of the land where the grain is raised, have now realized, in a mode far more efficacious, in an economical, and far less pernicious, in a moral point of view, all the benefits imputed to the ancient illegal system. But a mistake more erroneous and more prejudicial than that on which the statement we are considering is founded, could not be well imagined. The share of the profits of illegal distillation, which accrued to the landlord, was in fact more than counterbalanced by the losses which he sustained, from the failures and plunder resulting from the profligate

habits induced by it. The benefit of reform to the landlord, as well as to the tenant, may be illustrated by a single instance, which was communicated to me by a leading minister of the Kirk, near Elgin, on the eastern coast of Scotland. A neighbouring parish had been long notorious for illicit distillation, and always equally so for extreme and most degrading poverty. Its inhabitants happily underwent a reformation, abandoned their lawless habits, and were then in possession of the sum of at least £3000.

To the legal provision of spirits by means of regular distilleries must be attributed in a great measure the progressive diminution of crime, and all the concomitant vices and evils of smuggling and illicit distillation. Still the very legal provision may become in itself a bane, by facilitating and encouraging the consumption of spirits. The conscientious landlord must experience a painful struggle between considerations of personal interest and those which regard the moral welfare of his people, when he calculates the success of a distillery, and exercise some little self-denial in employing, as he is in duty bound, all his influence in counteracting the practice of drinking spirits, and substituting a less ardent and pernicious beverage. Notwithstanding the flagrant mischief produced by beer-drinking, as now exemplified in England, (the consequence of the multiplication of beer-shops, at a low rate of license,) there can be no question that it is far preferable to spirit-drinking; and the substitution of beer for whisky in Scotland would prove a most important benefit to that country. Nor could the most rigorous stickler for ancient customs object to it as an innovation, since ale, as General Stewart informs us, on the testimony of tradition, formed the universal national beverage of the people till the middle of the last century; French wines and brandy being drunk by the gentry. "Whisky-house," he states, "is a term unknown in the Gaelic. Public-houses are called Tai-Leanne, that

† Since the preceding observations were originally written, the alteration in the mode of levying the duty, together with the legal supply, have nearly put an end to the illicit traffic in Scotland. One lady, possessed of immense property, has prohibited the use of spirits altogether on her estates. The success of the experiment is matter of national interest.

is, ale-houses. Had whisky been the favourite beverage of the Highlanders, as many people believe, would not their songs, their tales, and names of houses allotted for convivial meetings, bear some allusion to the propensity, which has no reality in fact, and is one of those numerous instances of the remarkable ignorance of the true character of the Highlanders on the part of their Lowland friends and neighbours?" He might have added, that there was a law of the old Scotch Parliament, "anent" (against) auld wives brewing evil ale.'

Dr. Macculloch disputes the fact of ale having been much drunk by the Scotch, as their poverty prevented any but the landed proprietors from brewing. But as under the ancient system, the landlords, whether chief or subordinate, were numerous, and their labourers and other dependants lived much more in their houses, or depended more upon their bounty in compensation for service, they probably received ale or beer as part of it. He also doubts whether the brewing the superfluous barley instead of distilling it would be profitable, as even now the quantity consumed in the shape of spirits is small. But if the profits derived from it in England are so enormous and universal, would they not in some degree correspond in Scotland, provided the practice of spirit-drinking be much discontinued?

LEWIS; MORAL AND RELIGIOUS IMPROVEMENT.

The moral and religious improvement of the natives of Lewis has been retarded by the inadequacy of ministerial superintendence. One pastor only, except a missionary on the western coast, supported by the Royal bounty, is appointed to each of its four extensive parishes, containing a total population of 14,000 persons; and besides this, there are physical impediments which oppose great difficulties to intercourse between the clergy and their parishioners. The deficiency has been partly supplied by catechists and readers, who instruct the people in the forms appointed by the Established Church, in the most neglected districts, by schools, and by the excellent custom adhered to by the people here, as in other parts of Scotland, of meeting together at each other's houses, for the purpose of reading

and expounding the Scriptures. To this practice, eminently beneficial, though abused, more direct reference will be hereafter made.

In no part of Scotland have the Gaelic schools proved more salutary than in Lewis, where, except in the town of Stornaway, the Gaelic language is exclusively spoken; yet the inadequacy of the funds of the Society has compelled them to limit the advantage to a period, and thus the schools formerly established in the wild parish of Lochs have been withdrawn. The British and Foreign Bible Society has distributed a considerable number of copies of the Scriptures in Lewis.

A recent Sacrament in the parish of Uig, in Lewis, exhibited a scene of much interest. A considerable number of persons had assembled, as usual, on the occasion; and the minister, who had been recently appointed, a man of much piety and zeal, received the sudden and unexpected aid of an eminent Gaelic preacher, Mr. Macdonald, minister of the parish of Farintosh in Ross-shire, who had been blown to the island by a contrary wind, whilst shaping his course to St. Kilda on a voluntary mission, for a purpose which has since proved successful, of providing that island with a minister and place of worship. The addresses of Mr. Macdonald produced a sensation which has spread through the island: he was now employed in preaching to the Irish in the Gaelic, which they well understood, in the north of Ireland.

To all the plans for the moral and religious improvement of the people of Lewis, the proprietor and his lady have contributed their zealous assistance, and their temporary residence in the island has consequently proved very beneficial*.

* The late Lord Seaforth, father of Mrs. Stewart Mackenzie, the last male representative of the Seaforth line, "high chief of Kintail," was one of the most accomplished and princely characters of whom Scotland could boast. His acquirements, classical taste and erudition, powers of conversation, urbanity and liberality, rendered him the delight of every society in which he appeared, the pride of his clansmen and the ornament of his country. The infirmity of deafness debarred him to a great degree from that free intercourse with mankind for which the enlargement of his mind and the deep fund of his resources pre-eminently qualified him; and Mr. Fox is reputed to have said of him, that it was in compassion to the rest

of mankind that Providence by means of this defect deprived him of that transcendent superiority to which he would otherwise have attained. The principal residence of Lord Seaforth was Brahan Castle in the eastern part of Ross-shire: here he acted the part and supported the hospitality of a chieftain. His visits to Lewis were unfrequent, but the authority which he exercised was almost feudal: he raised in person the 78th regiment among the natives of this island, and in some instances, forced into the service able-bodied young men, who were reluctant to obey the call of their chief, which spread generally, like the beacon of former days, kindling the same flame of enthusiasm wherever it blazed along. The following amusing anecdote is related of the late Lord Seaforth. The women in Lewis are compelled to submit to much drudgery, from which they are elsewhere exempted. It was formerly, I know not whether it is still, the practice in this island for the men to ride the women across the fords. Lord Seaforth arrived at a stream on horseback, while a peasant so mounted was very contentedly crossing. He rode up to the man just as his fair pad had reached mid-channel, and then laid his whip about his back and shoulders till he dismounted, clad as he was, into the water.

Of the toil to which the women are subjected in this island, Dr. Macculloch says: "Droves of these animals were collected in the neighbourhood, trudging into the town from the moors, with loads of peat on their backs. The men dig the peat, and the women supply the place of horses, being regularly trained to it. I was also informed that they did actually draw the harrows, but this I did not witness." Yet it must be said in behalf of the natives of Lewis, that in defect of gallantry the civilized inhabitants of opulent and highly-cultivated Belgium are not a whit behind them. I have seen a woman dragging a boat along a canal in that country containing two stout fellows contentedly smoking their pipes, whilst crowds of passengers swept by without noticing the circumstance, as in any degree strange.

The sons of the late Lord Seaforth, men of high promise and accomplishments, died before their father; thus fulfilling a part of the mournful prophecy which is current in Scotland respecting this family.

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